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ADDRESSES AND ORIGINAL ARTICLES

COÖRDINATION OF THE REPRODUCTIVE PROCESSES *

BY A. S. PARKES, Sc.D. Camb., D.Sc. Lond., F.R.S.
FOULERTON STUDENT OF THE ROYAL SOCIETY

TEN years ago, while every other system of the body had become the object of intensive physiological research, the study of the reproductive processes was neglected by physiologists, and owed its growth in this country solely to the pioneer work of two men, Walter Heape and F. H. A. Marshall. At the present time the subject is probably the most active growing-point of physiology, and the task of the reviewer may be judged by the huge output of papers bearing directly or indirectly on reproduction.

The Male Hormone

I will first consider the male mammal, whose reproductive processes can be dealt with quite briefly. The nervous system plays a much greater part in the control of the accessory organs in the male than it is known to do in the female, but little new evidence has come to hand relating to this aspect of the subject. I propose, therefore, to turn immediately to the recent advances in the study of the correlation between the testes and the accessory organs and secondary sexual characters.

It has been known for centuries that removal of the testes causes non-development or atrophy of the accessory organs, seminal vesicles, prostate, and Cowper's glands. A similar atrophy occurs in the accessory organs of certain species such as the ferret when the testes undergo temporary periods of inactivity. The fact that transplantation of the testes to a different site does not have the same effect as castration indicated that the accessory organs were probably controlled by an internal secretion of the testis, but attempts to prepare extracts of the organ which would replace the testis have only recently been successful. The difficulty appears to have been twofold. Firstly, the interstitial cells form only a small fraction of the whole testis, so that very little active substance is obtained from a large bulk of original tissue, and secondly, the test object originally most used, the atrophied or undeveloped seminal vesicles of the mammal, appears to be comparatively difficult to stimulate. The first definite demonstration of activity in testis extracts was made in C. R. Moore's † laboratories in Chicago, the atrophied comb of the castrated male fowl being used among other test objects. Comb growth still remains the simplest form of test, but the further purification of extracts has made it possible to show a definite effect on the seminal vesicles and other accessory organs of the castrated rat.

The active substance is readily soluble in organic fat solvents and oils, but is comparatively insoluble in water. Its discovery in small quantities in male urine, from which it is more easily prepared than from testis, has made possible a certain amount of chemical work. A. Butenandt obtained a crystalline substance giving the typical comb-growth promoting response. This substance has probably an empirical formula of $C_{19}H_{30}O_2$. Crystalline preparations may be scarce for some time to come, but cruder preparations, containing a few capon-units per cubic centimetre oil are on the market. I must leave it to others, however, to suggest some useful clinical application of the material.

The Œstrous Cycle

The essential features of the female cycle are the maturation and ovulation of the Graafian follicle with the subsequent development of the corpus luteum, the preparation of the uterine endometrium for the implantation of the fertilised ovum, gestation of the embryo, and nursing of the young. Where the fertilisation of the egg can be controlled it is possible to study the behaviour of the female reproductive organs in the absence of implantation.

In the simpler forms ovulation occurs spontaneously at the so-called period of œstrus, and is accompanied by changes in the vagina designed to facilitate mating. One of the best known of these changes is the cornification of the vagina of the rat and mouse. This phase is followed by one correlated with the growth of the corpus luteum, during which extensive changes take place in the uterus. In the absence of fertilisation the post-ovulation growth of the uterus is maintained for a certain time, and then undergoes regression, the degree of disturbance being very variable.

The post-ovulation changes of the uterus apparently include in all species a greatly increased sensitivity to mechanical irritation, as shown by the so-called deciduomata reaction, but in many cases, including man, the most obvious feature is marked glandular hypertrophy and secretion. The somewhat unfortunate term "pseudopregnancy" is usually applied to the infertile post-ovulation phase. The behaviour of the reproductive organs after pseudopregnancy depends on the type of cycle shown by the particular animal. In species with continuous cycles, œstrus and ovulation recur soon afterwards, while in others further activity may be postponed until after a period of quiescence.

After pregnancy the behaviour of the organs is also very variable. In some species (rat and mouse) œstrus may follow immediately, so that the animal may be pregnant and suckling at the same time; while in others, including primates, the recurrence of the cycle may be postponed till late in lactation, or until after a period of quiescence.

Two important modifications to this general scheme are found. In the rabbit and the ferret ovulation occurs only after coitus, so that in the unmated animal a condition of persistent œstrus is found, while in the rat and mouse, although ovulation is spontaneous, the corpus luteum undergoes appreciable development only after copulation. In these four species, therefore, pseudopregnancy is found only after sterile mating.

The normal primate cycle has essentially the same fundamental features as that of the lower mammals. Ovulation is spontaneous and in many lower primates is preceded by extensive changes of the vagina and of the peri-vulval region which facilitate mating. In man, however, such external signs of the time of ovulation are not obvious. After ovulation, the corpus luteum forms and glandular development occurs in the uterus, essentially similar to that found during the luteal phase in the rabbit. This phase in man lasts 10–14 days and is succeeded in the absence of implantation by rapid atrophy of the corpus luteum and by the breakdown of the uterine endometrium which leads to menstruation. Menstruation is followed by regenerative proliferation of the uterus and by the development of a new mature follicle in the ovary. Dating the cycle from the first day of menstruation, ovulation is commonly said to occur between the 10th and 17th day. The obvious interpretation of the primate cycle in the light of the

* The Sidney Ringer lecture for 1934, delivered at University College Hospital, London, on Feb. 23rd.

† No attempt is made in this lecture to refer by name to more than a few of the many workers on the subject.

much fuller information available for lower mammals is to regard the post-ovulation premenstrual phase as a typical pseudopregnancy. The actual necrosis of the endometrium cannot, however, be explained merely as the breakdown of the pseudopregnant growth, because menstruation of a kind may occur without a previous ovulation and therefore from a uterus not showing the typical premenstrual growth. Further, the fact that the uterine cycle is almost certainly more regular than the ovarian has led some observers to doubt whether, in primates, there is any essential correlation between the ovarian cycle and menstruation. Such a conclusion, however, seems to be highly improbable; in any case it is quite certain that the normal premenstrual development of the uterus is dependent on the corpus luteum and is similar in nature and purpose to that found in such animals as the rabbit.

One further point of considerable interest to the physiologist may be mentioned in connexion with the primate cycle. The reception of a fertilised egg by the premenstrual uterus gives a new lease of life to the corpus luteum; the glandular growth of the uterus continues instead of regressing, and the menstruation which would otherwise occur is prevented. The time-relations of this sequence of events are remarkable. Allowing for fertilisation and the passage down the tubes it is improbable that the blastula can become embedded less than seven days after ovulation. This must often be only a few days before the next menstruation is expected, and even less before the prospective decline of the corpus luteum. The mechanism whereby the uterus makes it known that a fertilised ovum has been safely received is not known, but it must be very rapid in action. The time available is, in fact, so short that it has been suggested that the message must be sent out by the segmenting ovum before implantation.

The Œstrus-producing Hormones

I turn now to the first problem of the coördination of the reproductive processes—i.e., the means whereby the changes in the accessory organs are synchronised with those in the ovary. It has been known for very many years that the removal of the ovaries has a profound effect on the uterus and vagina; prepubertal removal results in non-development of the organs and removal in the adult leads to rapid regression, and incidentally, of course, to the cessation of all cyclic change. That this effect was not due to the breaking of some nervous chain was also shown long ago by the fact that transplantation of the ovaries to some other part of the body did not lead to such a result. The final proof that the accessory organs are regulated by chemical substances secreted by the ovary was provided in 1912, by Fellner, who showed that typical changes could be caused in the ovariectomised animal by the injection of extracts of ovaries.

The modern work on the subject dates from 1922, when E. Allen and E. A. Doisy adopted a specific reaction, the cornification of the vagina of the ovariectomised rat and mouse, in the testing of extracts. The use of a definite and easily detected reaction made possible a great advance, and within a few years ovarian extracts were prepared which were capable of producing in the ovariectomised animal all the extra-ovarian symptoms of œstrus, including the willingness to mate. Progress towards the isolation of the active substance was slow, however, until the discovery by B. Zondek and S. Aschheim in 1927 that relatively large amounts of the substance were present in the urine of the pregnant woman. With this greatly increased source of supply the purification of extracts was immediately possible. By the end of 1929 and the beginning of 1930 crystalline preparations had been made in no less than four different countries, by Doisy in U.S.A., Butenandt in Germany, E. Laqueur in Holland, and G. F. Marrian in London. Two types of compound were isolated, a ketohydroxy, $C_{18}H_{22}O_3$, and a trihydroxy, $C_{18}H_{24}O_3$. The physiological activities appear to be similar though the ketohydroxy is more active. Work on the chemical constitution of these substances has been greatly facilitated by the discovery that the urine of the pregnant mare contains relatively enormous quantities, and other naturally occurring œstrogenic substances have been isolated from this source by A. Girard.

Quite recently it has been shown by J. W. Cook and E. C. Dodds that a variety of chemically related substances, some of them synthetic and some having more obvious physiological properties, may have an œstrogenic action, though larger quantities are required than of the naturally occurring hormones. There can be little doubt that substances identical with the naturally occurring hormones will soon be synthesised. In the meantime, one particularly interesting piece of work has been the preparation from ketohydroxy-œstrin of a di-hydro compound four times as potent as the natural hormone. Since the use of mares' urine as a source, there has been no lack of the active substances, and in 1932 an international standard preparation consisting of 20 g. of pure crystalline ketohydroxy-œstrin was set up, the agreed international unit being defined as the œstrus-producing activity contained in 0·0001 mg. of the standard preparation.

The essential chemical features of both ketohydroxy- and trihydroxy-œstrin are their high solubility in organic fat solvents and oils, their very low solubility in water, and their thermostability. Two implications of these chemical properties are that only weak aqueous preparations can be made, concentrated solutions having to be made in oil, and that preparations are easily sterilised before injection.

Two points arising from this summary of the history of the recognition and isolation of the œstrus-producing hormone require elaboration. Firstly, the distribution of the substances in the animal body, and secondly, their possible clinical value. Crystalline preparations have not yet been made from ovarian tissue, so it is not yet known in what chemical form the substance occurs in the ovary, but potent extracts can readily be obtained from liquor folliculi, whole ovaries, circulating blood, placenta, and, of course, urine during pregnancy. The œstrus-producing hormone would be expected in the ovaries and blood, but its presence in the placenta and urine, indicating mass-production during pregnancy—i.e., at a time when such a hormone would least be expected to be abundant—represents a baffling problem. This anomaly, however, becomes insignificant beside Zondek's recent discovery that the richest known source of œstrin is the urine of the stallion, which appears to excrete rather more than 1 g. per week. Œstrin is not present in urine during pregnancy, however, in all species; women, mares, and cows being the only well-known ones at the moment. The occurrence of œstrin in the urine, easily detected by biological test, would offer a possible means of pregnancy diagnosis.

CLINICAL APPLICATION

I have mentioned that œstrin will produce in the ovariectomised animal all the extra-ovarian symptoms of œstrus; here its activity seems to end. Continued administration leads to intensification of the œstrous changes, sometimes even to a pathological

degree, but changes characteristic of other phases of the cycle are not produced. Pseudopregnant proliferation of the uterus, for instance, is not produced by any amount of œstrin. Possible clinical uses must, therefore, be considered in the light of its limited action in test animals. *A priori* one would expect, since extra-ovarian œstrous changes are not well defined in women, that its clinical effect would be slight, except possibly in causing the initial development of infantile uteri. In practice this expectation has been fulfilled, and clinical results with œstrin have been poor. This, however, has not been entirely the fault of the hormone. The dosage originally used was obviously inadequate, and only recently has it been recognised that the reasonable dose for a woman is enormous compared with that required to produce detectable change in an animal such as the mouse. Roughly, 1 international unit will produce vaginal cornification in the ovariectomised mouse, weighing about 20 g., but 200 times this amount is required to produce in it the full œstrous changes, including the uterine reaction and mating. Tested in the same way, with aqueous solutions, rats weighing about 200 g. require ten times this amount. The ovariectomised baboon, weighing about 10 kg., requires nearly 100,000 units. There is an obvious suggestion of a weight-for-weight basis here, and on such a basis a woman might be expected to require at least half a million units. In actual fact it has been shown quite definitely last year by C. Kaufmann, working in Berlin, that something like one million international units are required to cause in the ovariectomised woman proliferation of the uterine endometrium similar to that observed at the time of ovulation in the normal subject. It would thus seem that rational work on the clinical uses of œstrin is only just beginning. Whether or not menstruation of any type can be caused by a series of œstrin injections is far from certain; clinical results up to date are conflicting. There is evidence that menstruation in the monkey may follow double ovariectomy, even if no corpora lutea were present, or may follow the cessation of œstrin injection, but the typical premenstrual development of the uterus is not found even after the injection of huge amounts of œstrin. The menstruation that has sometimes been observed to follow œstrin injection may therefore be analogous to that which undoubtedly occurs in non-ovulating monkeys and in non-ovulating women.

The Corpus Luteum Hormones

I shall now consider the factors involved in the causation of the characteristic post-ovulation changes. The typical predecidual or pseudopregnant condition is only found when a corpus luteum is present in the ovary, and this fact, together with extirpation experiments, led to certain functions being ascribed to the corpus luteum long before active extracts of it were prepared. The principal functions seemed to be (*a*) causation of predecidual development of the uterus, (*b*) maintenance of pregnancy, and (*c*) initiation of development of the mammary glands.

The first was clear-cut. The second was not of general application, because there are well authenticated cases of pregnancy continuing after complete double ovariectomy, though in most species the necessity for the corpus luteum is clear enough. The case of the mammary glands was also rather complex, since in only two animals, dog and ferret, does the development of the gland during pseudopregnancy equal that during true pregnancy. The more usual condition, as found in the rabbit for instance, is for the pseudopregnant development of the gland to equal that during the first half of pregnancy. During the second half a new phase of development, possibly due to fœtal or other influence, sets in.

The first corpus luteum extracts with a specific activity were obtained in 1929 by G. W. Corner, who showed that an alcoholic extract administered daily to a rabbit ovariectomised immediately after ovulation would cause the typical glandular hypertrophy of the uterus found in the post-ovulation phase. In searching for a more convenient test animal, Corner was led to experiment with immature rabbits. Such animals, however, proved completely insensitive to corpus luteum extracts unless previously treated with œstrin. In other words, immature or adult rabbits will only respond to the hormone, appropriately called progestin by Corner, if the uterus is in the œstrous condition. This principle has since been extended to many other mammals, including man, and it is now a well-established fact that the endometrium will only respond to extracts of corpora lutea when in the œstrous condition—natural or induced. This fact obviously has an important bearing on the clinical value of œstrin. The corpus luteum substance responsible for the effect is soluble in the ordinary fat solvents, but apparently not in water. Chemical investigation has, however, been held up very seriously by the comparative scarcity of material; the ovaries of many cows are required to provide enough of the active material to cause uterine proliferation in one rabbit. In this connexion it is important and significant to note that the distribution in the body of the active substance is much more limited than that of œstrin. Up to date, the only reliable source known is the corpus luteum itself. All efforts to detect the hormone in the urine during pregnancy, for instance, appear to have failed, and unless some quite unexpected source becomes available it is likely that progress will be slow. The unit of progestin is usually defined as the amount required to cause complete pseudopregnant proliferation of the œstrous rabbit uterus. In the absence of any recognised standard preparation, however, this unit is bound to vary according to the technique of assay of individual workers.

Corner was also able to show that similar preparations given to the rabbit ovariectomised early in pregnancy would enable gestation to continue, and it is possible, therefore, that the substance which is responsible for the maintenance of pregnancy is similar to, or even identical with, that which causes the initial proliferation of the uterine endometrium. On the other hand, the existing preparation apparently does not cause the development of the mammary gland found in the pseudopregnant rabbit, and one must suppose, therefore, either that the corpus luteum is not responsible for this development, or else that the relevant substance is not extracted by present methods. It seems improbable that extra-ovarian influence is involved in the mammary development which occurs during pseudopregnancy, and the latter of these alternatives is the more likely.

A further reaction of the reproductive organs which seems referable to the corpus luteum was described by H. Knaus some years ago, and may have considerable clinical application. Knaus found that whereas the isolated uterus of the œstrous rabbit showed much spontaneous activity and was highly sensitive to the action of pituitrin, the uterus during pseudopregnancy, or a sterile horn of the uterus during pregnancy, showed greatly decreased spontaneous activity, and was relatively insensitive to the action of pituitrin. This change seemed likely to be due to the action of the corpus luteum, and it

has now been found possible to reproduce the effect in the ovariectomised rabbit by the administration of corpus luteum extracts. There is some evidence, moreover, that the desensitising action is caused by a different substance from that responsible for the endometrial proliferation—a crude corpus luteum extract can be so fractionated that the two activities are partially separated.

USE OF PROGESTIN

We have now to consider the clinical possibilities of corpus luteum preparations, and this can best be done by taking the known biological effects of luteal extracts and considering what might be their effect in women. We have seen that the post-ovulation pre-implantation proliferation of the endometrium, the so-called pseudopregnant development, is an essential phase of the normal menstrual cycle, and that œstrin alone is quite incapable of producing this change. An obvious clinical experiment was therefore to investigate the result of giving progestin to an ovariectomised woman in whom the uterus had already been sensitised with œstrin.

The difficulty of obtaining adequate amounts of progestin has retarded work of this kind, but Kaufmann has shown that about 30 rabbit-units of progestin,, following sensitisation with œstrin, will produce complete premenstrual development of the endometrium in the ovariectomised woman, and that normal menstruation follows the cessation of injections. It is important that here, again, the dosage required follows roughly a weight-for-weight basis. Kaufmann also extended his work to cases of primary amenorrhœa.

It may thus be said with confidence that by the use of œstrin and progestin it is possible to cause in the ovariectomised or quiescent woman the changes which constitute the extra-ovarian cycle, and, furthermore, that these changes can be produced for their normal duration and in their proper sequence. In other words, a passable imitation of the normal uterine cycle can be induced after removal or hypertrophy of the ovaries, and to this extent woman has been brought into line with experimental animals.

Whether the possibility of inducing a uterine cycle after removal of the ovaries is of more than academic interest must be left to the clinicians to decide. In cases of amenorrhœa due to hypofunction of the ovaries, the clinician would presumably wish to secure reactivation of the ovaries as well as induction of the uterine cycle, and, as is well known, the ovarian hormones have no apparent action on the ovarian structures.

The second function of the corpus luteum, the maintenance of pregnancy, may be of considerable clinical importance. While it appears to have been demonstrated without doubt that double ovariectomy during pregnancy does not necessarily lead to abortion, yet cases of habitual or repeated abortion due apparently to physiological causes are not infrequently met. Of possible physiological causes the most likely would seem to be deficient corpus luteum activity. Clinical work is now being carried out in many parts of the world on the possibility of controlling such cases by the administration of progestin.

So far I have referred only to the use of progestin in replacement therapy, where a deficiency of luteal activity is indicated. Clinically, however, other conditions arise which might respond to corpus luteum treatment. Dysmenorrhœa is usually ascribed to over-excitability of the uterus at the time of menstruation, possibly due to a premature decline of the corpus luteum, while menorrhagia, whatever its origin, presumably arises as a result of over-activity of some kind. The capacity of luteal extracts to decrease the spontaneous activity of the uterus of experimental mammals naturally leads one to hope that a similar effect would be found in women, and that some control of dysmenorrhœa could thereby be obtained. In the absence of exact information as to the cause of menstrual bleeding, a biological basis for the treatment of menorrhagia is more difficult to arrive at. It is certain that the factor causing necrosis of the endometrium can act in the absence of the preliminary premenstrual development caused by the corpus luteum, but there is some evidence that it does not act in the presence of an active corpus luteum. To this extent there is some reason to suppose that excessive bleeding could be checked by administration of progestin. In practice good clinical results have been reported in both dysmenorrhœa and menorrhagia following the administration of corpus luteum extracts, but in view of the difficulty of controlling clinical work of this nature it is necessary to interpret such results with caution.

Regulation of Ovarian Periodicity

The intimate correlation between the cyclic changes in the ovary and those in the accessory organs naturally led to the conclusion that periodic activity of the ovary was responsible for the cyclic changes in the accessory organs, and, as we have seen above, this view has been fully substantiated for the normal animal. The centre of interest then shifted to the problem of what regulated the periodicity of the ovary. At first it was considered that the ovarian cycle was the expression of some inherent property of the ovary itself and that the cyclic appearance of follicles and corpora lutea was responsible for the cyclic endocrine activity of the ovary. This view, however, has in the course of the last ten years been shown to be untenable. Thus complete destruction of the follicular system and consequent prevention of corpus luteum formation, by exposure to X rays, does not eliminate the periodic occurrence of œstrous changes in the accessory organs. Neither the production nor the periodic action of the œstrus-producing hormone is necessarily dependent, therefore, upon the presence of maturing Graafian follicles. This work suggested strongly that ovarian periodicity was regulated from some source external to the ovary. Such a conclusion was in keeping with the curious facts of compensatory hypertrophy of the ovary. The removal of one ovary and most of the second results in hypertrophy of the remaining tissue until as many ripe follicles are produced as is usual with the species. In converse experiments it can be shown that the grafting of a third ovary to an animal does not increase the number of follicles matured. In other words, there seems to be a limited amount of follicle-growing substance available in the animal, and the number of follicles customary for the species is produced whether a fragment of an ovary, two ovaries, or even three ovaries are present. The key to this situation has now been found in the anterior pituitary body.

Relation between the Anterior Pituitary Body and the Gonads

As early as 1922 H. M. Evans, in California, had discovered that the administration of simple saline extracts of ox anterior pituitary to adult rats caused remarkable changes in the ovary. All the larger follicles underwent luteinisation without ovulation,

so that the ovary came to consist of masses of atretic corpora lutea, each containing the remains of the ovum. At the same time the cyclic appearance of œstrous changes in the accessory organs was suppressed. The profound significance of these observations was not fully appreciated for some years.

In 1927 two groups of workers almost simultaneously reported experiments which brought into prominence the rôle of the anterior pituitary body in the regulation of the reproductive cycle. Zondek and Aschheim, in Berlin, starting from the fact that the ovarian changes appeared to be regulated from some external source, were led to make a thorough investigation of the effects of other endocrine organs on the ovary. They obtained negative results from all glands except the anterior pituitary, with which they obtained striking effects. They found that the implantation of pieces of anterior lobe into the immature mouse or rat caused ovulation and corpus luteum formation in the ovaries, and the appearance of œstrous changes in the accessory organs.

P. E. Smith, basing his experiments on his knowledge of the profound atrophy of the reproductive organs caused by hypophysectomy, demonstrated a similar result by similar means, and was able to show that the atrophy following hypophysectomy could at least be partially repaired by implantation of anterior lobe tissue. It should be noticed that no transplantation of tissue was effected. The implanted tissue was absorbed and with it the active substance.

Both groups of workers also agreed that no effect was produced after ovariectomy; in other words, that the changes in the accessory organs were secondary to the changes in the ovaries, and were due to the endocrine activation thereof.

These results immediately gave significance to the earlier observations of Evans, and to the multitude of clinical and experimental observations, to which it is unnecessary to refer in detail, that disorders of the anterior lobe result in dysfunction of the reproductive organs, and from this time the whole study of the physiology of reproduction has been reorientated.

By the end of 1927 it was clear that both the major phases of the ovarian cycle, maturation of follicles, and luteinisation of the granulosa to form corpora lutea, as well as endocrine activity, could be caused in the quiescent ovary by the administration of anterior lobe material. It has since been shown that extracts, and also the implantation of fresh tissue, lead to both the ovarian effects appearing in various proportions, and much subsequent work has so far failed to produce preparations of the anterior lobe which will consistently give only one effect or the other. Controversy has raged round the problem of whether or not two different substances elaborated by the anterior lobe are responsible for the two effects of follicular growth and corpus luteum formation, or whether one substance acts differently in different concentrations; but the balance of probability is that at least two different substances are concerned in the causation of the ovarian changes.

With this brief reference to the early observations, I now pass on to review some of the more important recent work.

EFFECTS OF HYPOPHYSECTOMY

Since the relation between the anterior lobe and the gonads became a subject of intensive research, much attention has been concentrated on the operation of hypophysectomy. Previously, experimental work had largely been limited to that carried out by B. Aschner, H. Cushing, and others on dogs, and by Smith on rats. In the last few years, however, many of the difficulties inherent in the operation have been overcome, and monkeys, cats, rabbits, ferrets, mice, hedgehogs, and guinea-pigs can be added to the list of species in which hypophysectomy has been achieved. As a result of this work the effects of removal of the anterior lobe of the pituitary body are now well known; these include cessation of bodily growth and atrophy of the reproductive organs, and also of the thyroid and adrenal glands.

I shall consider here only the connexion with the reproductive organs. These depend, in the first instance, on the time at which the operation is performed. Thus hypophysectomy of young animals of either sex inhibits the development of the gonads, and therefore of the accessory organs. Hypophysectomy of the quiescent adult results in lack of development at the next breeding season. Hypophysectomy soon after ovulation inhibits the development of the corpora lutea, and if the animal is already pregnant, leads to reabsorption or abortion of the fœtuses. Particularly interesting results have been obtained with the two species which only ovulate after coitus.

In the rabbit, removal of the pituitary within one hour of mating inhibits the ovulation which would otherwise take place in about ten hours. Removal later than one hour has no such effect. There is thus evidence that copulation stimulates the pituitary, probably by nervous paths, to secrete the necessary ovulation-producing substance, which is poured very rapidly into the circulation, although ovulation does not take place until about ten hours later.

In the ferret the time relations are even more remarkable. The secretion of the ovulation-producing substance is completed within two hours of copulation, but ovulation does not take place until 36–40 hours later. These two animals provide an extremely interesting example of a two-stage process of stimulation, of which the first stage is almost certainly nervous, and the second stage is definitely endocrine.

At whatever time of the cycle hypophysectomy is performed the chronic results are always the same; atrophy of the accessory organs to the extent found after gonadectomy, and regression of the gonads to the condition found in the very immature or otherwise sexually quiescent animal. It may be noted, however, that hypophysectomy, even of long standing, does not eliminate the primordial germ cells. The ovary usually retains large numbers of fully grown ova, surrounded by a single layer of follicular epithelium, and the existence of the structures is therefore independent of the anterior pituitary body. In the same way spermatogonia persist in the testis after hypophysectomy. These facts are of importance as showing that a basis is present for subsequent development, provided the necessary stimulation can be applied.

EFFECTS OF ANTERIOR LOBE EXTRACTS

With the preparations at present available, difficulty has been experienced in restoring the reproductive organs of the hypophysectomised animal to their normal condition, and apparently no one has yet been able to restore a pair of hypophysectomised animals to sufficient normality to enable a pregnancy to be initiated and maintained. Smith was able to induce spermatogenesis in hypophysectomised male rats by implants, but the testes seem much less responsive to extracts. In the experience of most workers even the production of ovulation in the hypophysectomised animal of long standing is a matter of great difficulty. Abnormal processes, such as theca luteinisation, formation of small atretic corpora lutea, cystic follicles, &c., are the usual result of treatment. There is no reason to suppose, however, that this is more than a temporary difficulty due to the inadequacy of present preparations. In the newly hypophysectomised animal ovulation can be

induced with comparative ease. Thus, in the œstrous rabbit, removal of the pituitary body makes little difference in the amount of a preparation required to cause ovulation, provided that the injection is made immediately after the operation.

The intact animal has so far been much more used for the demonstration of the effects of anterior lobe preparations than has the hypophysectomised one, and since a sexually quiescent animal is obviously desirable, the immature animal has naturally been much used. In considering this work on normal animals it must be remembered that the result is complicated by the presence of the intact pituitary, which may possibly be stimulated by the treatment.

Administration of extracts to the immature male results in stimulation of the endocrine activity of the testes and in the consequent hypertrophy of the accessory organs, but premature spermatogenesis has not yet been produced with regularity. The adult male offers little opportunity for experiment except in species where there is a seasonal period of quiescence. In the ferret the atrophied winter testis is extremely resistant to the stimulating effect of anterior lobe preparations. The senile male of rats and other species, however, has been said to respond.

In the immature female very variable effects are produced according to the type of extract used. Where there is appreciable development of follicles without luteinisation or ovulation, the stimulation of œstrin production by the ovary results in the appearance of œstrous changes in the accessory organs, including cornification and opening of the vagina of the rat and mouse. Where the luteinising effect predominates, œstrous changes in the accessory organs may be absent. Administration to the adult rat or mouse leads to complete confusion of the ovarian cycle, but again the dominating effect, and the changes in the accessory organs, depend on the type of extract given. If treatment is limited to one or two injections just before the animal is due to ovulate spontaneously, a "super-ovulation" may result, and Smith has shown that when copulation occurs at such a time, many embryos in excess of the normal number may be implanted. The economic possibilities of such treatment, however, seem to be limited by the fact that a great excess of embryos could hardly be carried to full term and reared normally.

If a series of injections is made into the pregnant rat or mouse, the effect on the fœtuses again depends on the dominating response of the ovary. Implantation of fresh anterior lobe tissue, producing mainly follicular growth and ovulation, has been shown to result in abortion or reabsorption of the fœtuses, while extracts predominantly causing luteinisation may actually prolong pregnancy.

The rabbit has proved an invaluable animal in the investigation of the effects of anterior lobe preparations. Several years ago it was shown that ovulation could be caused in the œstrous female by a single intravenous injection of anterior lobe extract. The corpora lutea arising from such an ovulation behave normally and the duration of functional activity is similar to that of the corpora lutea resulting from sterile copulation. This reaction of the œstrous rabbit has provided a satisfactory test for the presence of the ovulation-producing substance. The pregnant rabbit can also be made to ovulate by the administration of a dose rather larger than that required for the œstrous rabbit. This has formed a very convenient method of investigating the effect of continued luteal activity on the duration of pregnancy, and it is now known that the production of a new set of corpora lutea towards the end of pregnancy in the rabbit results in the retention of the fœtuses long beyond normal term.

So far, the changes described in the normal or hypophysectomised animal have all related to the gonads, or have been secondary ones in the accessory organs due to gonad stimulation. There is evidence, however, that one accessory organ, the mammary gland, is influenced directly by the anterior pituitary body. The hypertrophy of the mammary gland following the injection of alkaline extracts of anterior lobe was originally thought to be due to the mass of corpora lutea produced in the ovary. Further work, however, showed that a somewhat similar response of the mammary gland could be induced in the ovariectomised rabbit. It seems that the hypertrophy of the mammary gland in the later stages of pregnancy, which in most animals is far in excess of that found during pseudopregnancy, may be due to the activity of the anterior lobe. There is nevertheless some evidence that the influence of the pituitary on the mammary gland is concerned with the actual secretion of milk rather than with the initial development of the secretory tissue.

Distribution and Preparation of Gonad-stimulating Substances

Gonad-stimulating substances identical with or similar to those found in the anterior pituitary body are also present in the human urine during pregnancy and in the human placenta. Curiously enough they have not been found in the placenta or urine of other species, though comparatively large amounts have been demonstrated in the blood of the mare. Until chemical isolation is achieved it is difficult to decide whether the substances are the same as those of the anterior pituitary. The chemical properties, so far as they are known, are similar, and in view of the variability of their biological action it is difficult to point out specific differences of this kind. This is particularly true when one considers that the ratio of follicle-maturing to luteinising substance may be very different in extracts from the two sources. Extracts from urine of pregnancy do, however, show one biological difference—namely, they very often give rise to a product of abnormal follicular growth, blood follicles, whereas anterior lobe preparations do so much more rarely. A further biological distinction is that whereas anterior lobe preparations will cause a weight increase in the immature ovary of the rat up to 20 times the normal, urine preparations cause only a strictly limited response. The reason for the large amount of the substances in urine of pregnancy and in placenta is not known. They are occasionally found in the urine in other conditions than pregnancy. The material from urine is often referred to as prolan, the name originally used by Zondek, prolan A being the follicle-maturing principle and prolan B the luteinising one. A substance prepared from human placenta by J. B. Collip, and named by him emmenin, was originally thought to have gonad-stimulating properties, but it has now been identified merely as trihydroxy-œstrin. The term "anterior-pituitary-like" (Collip's A.P.L.) is often applied to the gonadotropic substances from other sources than the gland itself.

I must refer here to one important clinical development depending on the distribution of the gonadotropic substances. Zondek and Aschheim were not slow to see that the presence in the urine during early pregnancy of an easily identifiable substance might be of diagnostic value. Their foresight was rewarded and the Zondek-Aschheim reaction, depending on the production of blood follicles or corpora lutea by injection of the urine into immature mice has now become the standard test for pregnancy. The technique of the test has been described in detail by Aschheim. A variation of the test, introduced by M. H. Friedman, is to use the ovulation reaction of the œstrous rabbit. Neither of the reactions is given by urine from non-pregnant women, except in certain comparatively rare cases. Such exceptions to the

specificity of the test, its earliest use, and the precautions to be observed, have all been described by many workers.

The chemical properties of the gonadotropic substances, so far as they are known, indicate a complex and unstable nature.

The substances are insoluble in organic fat solvents, but appear to be soluble in water. They are thermolabile in the presence of water, but comparatively stable to heat in the dry state. They are comparatively stable to weak acid and alkali. Preparations can be stored indefinitely as dry powders but aqueous solutions deteriorate rapidly after a few weeks. Extracts were originally made from anterior lobe with weak acid or alkali, followed possibly by alcoholic precipitation. It is now customary to start with acetone-desiccated anterior lobe tissue, which has the great advantage that it is easy to handle and can be kept indefinitely. A great advance in extraction was made when H. L. Fevold discovered that the active substances were soluble in aqueous pyridine.

Their preparation from urine has been greatly facilitated by the work of Doisy, who introduced the use of a number of reagents which precipitate the active substances. Extracts of anterior lobe, urine, and placenta, sufficiently purified for clinical use, are now available; these are usually standardised in "rat units" or "mouse units," but the definition of the unit is very variable, and may not even refer to the same test object. A further complication is that the aqueous solution is not stable indefinitely. It is probable that some arrangement will have to be made whereby the required amounts of dry powder and solvent can be issued together and mixed just before injection.

Up to date, active crystalline preparations have not been produced, and it is probable that a great deal of difficult work will have to be carried out before the pure substances can be obtained. Claims to have separated the follicle-growing and luteinising principles have not been substantiated, and the final proof that there are two different substances has, therefore, not yet appeared. Nevertheless, strong evidence is provided by the fact that one source of activity material seems to yield one of the active substances only. Zondek showed some time ago that the urine of ovariectomised or senile women was often capable of causing follicular growth, without luteinisation or ovulation. This result has been confirmed by many people, and it seems very probable that different substances are involved in the causation of the various effects observed in the ovary, and that the follicle-growth substance is not responsible for the actual act of ovulation.

Clinical Use of the Gonadotropic Hormones

The experimental work briefly sketched above leaves little doubt that it will ultimately be possible to control the activities of the ovary with certainty and precision, and the gynæcologist will be able to stimulate either or both of the ovarian phases as required, and with them the changes in the accessory organs. At the present time, however, the situation is very far from this ideal. The cycle in the accessory organs can be controlled by the use of œstrin and progestin, each of which has definite and clear-cut effects; but, while this may often be useful, it is only the first step towards the restoration of a normal reproductive cycle in cases of ovarian deficiency.

The problem is, can we as yet restore the normal ovarian cycle by the use of gonadotropic preparations at a time when it is absent? The answer is, No. Administration of our existing preparations leads to chaos in the ovary, the various phases being confused. Even in the experimental animal, where the conditions can be controlled, pregnancy has not yet been induced by the use of gonadotropic preparation at a time when it might not otherwise have occurred. Our knowledge of the biological action of these substances is in its infancy, and many more data will be necessary before even experimental animals can be made to respond in any manner desired. In the meantime the preparations can only be used clinically in the hope that they may do something, and that if they do it will be something in the right direction and not in the wrong. This may be perfectly justifiable, but I would urge that where effects on the accessory organs only are sought, œstrin and progestin, whose biological action is far better known and far more easily controlled, should for the present be given every chance before ovary-stimulating preparations are used.

These difficulties, however, are only temporary. The experimental work described above is essentially that of the past ten years, and it requires but little imagination to see where the next twenty may bring us. We have a long way to go before even our present objectives can be attained, but we are moving with amazing speed.

THERAPEUTIC EFFECT OF A PERIOD OF REST IN BED IN ANGINA PECTORIS

(ANGINA OF EFFORT)

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REST in bed has long been advised as a treatment for severe angina. There is general agreement that rest is of first importance in angina of myocardial infarction, but its effects in angina of effort have never been closely investigated, and the literature is vague about the results achieved. Among the older writers both Latham [1] and Gairdner [2] emphasised the value of rest, but they did not give any details. Osler [3 4] advised absolute rest in bed when attacks recurred often and were severe. Allbutt [5 6] further stressed its value in obstinate cases and cited one of his own patients whose attacks ceased after resting in bed for five months. Greene [7] also noticed that angina sometimes disappeared for long periods after treatment by rest. Coronary thrombosis or periods of natural remission were not excluded in these observations, however. Gubergritz [8] advised that rest in bed should be reserved more especially for those patients in whom angina was associated with high blood pressure, though he did not give supporting evidence. Romberg [9] mentioned the importance of complete rest in bed whenever the attacks were severe and that exertion should only be resumed gradually one or two weeks after the attacks ceased. A few other writers have suggested the duration of the rest period which they thought advisable. Barié [10] suggested ten days. Soca [11] said that although most authors advised one or two weeks absolute rest, this period was necessary only in severe cases. Hay [12] advised one month's complete rest in

bed. Brooks [13] recommended that severe cases should remain at complete rest until they were able to sit up without inducing pain. White [14] emphasised the great importance of rest and pointed out its astonishing effectiveness in some patients. That this view has not been generally accepted was shown by the recent statement by Sutton and Lueth [15] that rest in bed is not indicated in angina pectoris and that it may be harmful.

This review shows that there has not been a systematic study of the therapeutic effects of complete rest in bed as judged by the immediate and subsequent liability to anginal attacks, and present opinion on this problem is often confused. We therefore determined to observe the effects of rest in a number of patients with angina pectoris of effort. Before the completion of our own investigations, Wayne and Laplace [16] published their results with five patients. They estimated the effect of rest on the amount of exercise required to produce pain and were surprised that improvement was so slight. In two patients with pain of recent onset there was benefit, but in the other three it was negligible.

METHODS

Twenty-three patients with angina pectoris were admitted to hospital during 1930–33 for special observation and treatment with rest. Their ages were from 44 to 70 years, and the average age was 56 years. Eighteen were males and five females. They had previously attended as out-patients in the cardiac department of the hospital for periods varying up to several years. They had been included previously in the series in which we estimated the value of drugs used in the treatment of angina pectoris of effort [17 18] and so were judged to be coöperative. Recent coronary thrombosis was always excluded. Thus, each patient had angina characterised by recurrent attacks of substernal pain which spread across the chest and often passed through to the back; it frequently radiated to the shoulders or down one or both arms, and occasionally to the jaw and neck. The attacks were almost always determined by physical exertion; emotion sometimes induced them in a few patient but only where physical movement would bring on the pain even more readily. A detailed history and clinical examination were recorded in each patient. Patients with syphilitic angina pectoris were excluded and in the present series all had a negative Wassermann reaction in the blood-serum. X ray examination of the heart and aorta was made and an electrocardiogram taken in each case.

Each patient rested in bed in a general ward of the hospital for at least one month. The rest accorded was as absolute as possible. During this period the patients were washed and fed by the nursing staff and a bedpan was used. Only slight voluntary movements were permitted and even these were discouraged. If anginal attacks occurred they were relieved by nitrite and recorded. During the fifth week patients were allowed to be up for short intervals and usually by the end of this week they were up in the ward for two hours each evening. In the sixth week patients remained out of bed for four to six hours and walked quietly in the ward. During the latter half of this period they helped in such small duties as laying tables for meals. In the seventh week they walked measured distances over a planned itinerary in the grounds of the hospital under our personal supervision. Apart from nitrite to relieve any anginal attacks the only medicine prescribed during the stay in hospital and also after leaving was a placebo mixture. Upon leaving hospital their exercise was gradually increased. They attended the cardiac department fortnightly for six months or longer and the amount of exercise taken each day, particulars concerning attacks, and details of other influences that might have affected the incidence of attacks were recorded at each visit. Similar information about the period prior to admission to hospital had previously been collated.

In assessing improvement due to rest there were a number of factors which sometimes invalidated comparison between the pre- and post-rest periods. Changes in the character or extent of exercise, weather conditions, emotional influences, and periods of natural variation of the symptoms were taken into account, and when they were thought to influence the results these were discarded and a further estimate of improvement made later. In nine patients one or other of these factors made judgment of the effect of rest impossible, so these were excluded from the series after they had left hospital. Special care was taken to avoid the comparison between a continued resting period at the patient's home after discharge from hospital and a pre-resting period when the patient was engaged in his occupation. A return to the usual habits was always sought before estimating the degree of clinical improvement.

RESULTS

The patients have been placed in three groups according to their response to treatment. Those referred to as greatly improved (*a*) showed a reduction of more than 50 per cent. in the severity or in the frequency of attacks after the rest period; and those slightly improved (*b*) less than 50 per cent. Seventeen out of the 23 patients in the series improved; 7 showed great improvement (*a*), 10 slight improvement (*b*), and 6 no improvement (*c*). The improvement often applied both to the frequency and severity of the attacks, but was more often due to a reduction in their severity rather than to a decrease in their incidence. In the patients who improved this lasted for four up to nine months.

In order to determine whether certain cases responded more readily than others to treatment with rest the patients were arranged in four groups according to the height of the blood pressure, the duration of the angina, severity of the angina, and the ease with which the attacks were induced (Tables I. and II.).

Height of the blood pressure.—The blood pressure was considered to be raised when the systolic reading exceeded 160 mm. Hg, and the diastolic 100 mm. Hg. The blood pressure was raised in 10 out of the 23 patients. The highest record was 290/140 mm. Hg, and the average 210/115 mm. Hg. Of the 10 patients with raised blood pressure 7 improved, and out of the remaining 13 with normal blood pressure 10 improved. At first sight these results appear comparable, but when the degree of improvement was considered, great improvement (*a*) resulted in 5 out of 10 patients with a raised blood pressure, but only in 2 out of 13 in whom it was normal. In those with hypertension the blood pressure was not always lowered during the rest period or afterwards nor was the clinical improvement in any way associated with such a change.

Duration of the anginal history.—Patients were arranged in three groups according to whether angina had been present for a period up to three months, one year, or longer. Eight patients were improved out of 11 in whom angina had been present for over one year, and 9 out of 12 in whom the onset of angina

was more recent. There was no difference in the degree of improvement in these two groups. But of six cases with angina of three months' duration or less all were improved, four greatly.

Severity of the angina.—In 19 patients the angina was severe or moderately severe, and 14 of these improved after rest, six of them greatly. In four cases the pain was slight and three of these improved, though only one greatly.

Ease with which the anginal attacks were induced.—Anginal attacks were induced in 14 out of the 23 patients by the exertion of voluntary movement in bed while they were resting in hospital. Ten of these patients showed improvement. In the remaining nine patients angina was never readily induced by trivial exercise; seven of these were improved by rest.

TABLE I

Details of Twenty-three Patients with Angina Pectoris treated by Complete Rest in Bed for one month

Case	B.P.	Duration of anginal history.	Severity of angina.	Attacks during resting and ambulatory periods in hospital.		Improvement after 3 to 6 mths. return to pre-rest period habits.
				Rtg.	Amb.	
1	165/75	8 yrs.	Mod.	P.	P.	Slight
2	140/90	4 ,,	Severe.	A.	P.	Great
3	185/120	2 ,,	Mild.	A.	A.	,,
4	170/90	8 ,,	Severe.	A.	P.	Slight
5	190/125	3½ ,,	Mod.	A.	A.	,,
6	290/140	3 mths.	,,	A.	A.	Great
7	205/95	6 ,,	Severe.	P.	P.	None
8	115/80	4 yrs.	Mod.	P.	P.	Slight
9	190/90	2 ,,	,,	P.	P.	None
10	215/130	8 ,,	,,	P.	P.	Great
11	120/80	1 year.	Mild.	A.	A.	None
12	170/110	2½ yrs.	Mod.	A.	A.	,,
13	120/70	6 mths.	,,	P.	A.	,,
14	200/120	1 mth.	Severe.	P.	P.	Great
15	240/125	9 mths.	,,	P.	P.	Slight
16	170/105	3 ,,	Mod.	P.	P.	Great
17	205/105	4 yrs.	Severe.	P.	P.	None
18	130/85	3 mths.	,,	P.	P.	Slight
19	145/85	14 days	Mod.	P.	A.	Great
20	125/85	6 mths.	Mild.	A.	A.	Slight
21	140/90	3 ,,	Severe.	A.	A.	,,
22	130/90	4 ,,	Mild.	P.	P.	,,
23	140/90	2 yrs.	Severe.	P.	P.	,,

P. = present; A. = absent.

TABLE II

Showing Degree of Improvement in Twenty-three Patients with Angina Pectoris of Effort following Treatment by Complete Rest in Bed for one month

Description.		Patients.	Patients grouped according to degree of clinical response.		
			Great imp. (a)	Slight imp. (b)	No imp. (c)
Total number		23	7	10	6
State of B.P.	Raised	10	5	2	3
	Not raised ..	13	2	8	3
Duration of anginal history.	Over 1 year ..	11	3	5	3
	Under 1 year ..	12	4	5	3
	3 mths. or less ..	6	4	2	0
Severity of angina.	Severe	9	2	5	2
	Mod.	10	4	3	3
	Mild	4	1	2	1
Ease with which attacks were induced	Attacks* ..	14	4	6	4
	No attacks* ..	9	3	4	2

* During rest period.

DISCUSSION

When 23 patients with angina pectoris (angina of effort) had complete rest in bed in a hospital ward for one month, 17 obtained subsequent improvement. In seven this improvement was such that the severity or frequency of attacks was reduced by more than one-half.

The various factors which may prevent an accurate assessment of the benefit derived from rest were kept in mind so as to avoid fallacies as far as possible. Thus coronary thrombosis was excluded not only because it is well recognised that such patients improve with rest, but also because anginal attacks are often spontaneously lessened afterwards. Care was also taken to ensure that patients returned to habits of life after leaving hospital that were comparable with those of the pre-rest period so that the effect of the rest could be judged more accurately. The influence of natural remissions was reduced by observation for many months after leaving hospital. Most of the patients had been under observation for many months before admission and during this time there had been ample proof of the constancy of the pain. Even this does not exclude the possibility that the onset of a remission coincided with the period of rest, but we believe that its probability has been greatly minimised in this way.

We also tried to find some characteristic indication which might point to a favourable result from rest. Neither the severity nor frequency of attacks, nor the ease with which they were induced had any influence in deciding whether rest was beneficial. But a short duration of less than three months favoured improvement. It was also greater in cases with a raised blood pressure; thus great improvement occurred in 5 out of 10 patients with a raised blood pressure, whereas only 2 out of 13 in whom the blood pressure was normal showed a similar response. In those with hypertension the clinical improvement did not appear to be related to any permanence in the fall of blood pressure which was sometimes met during the rest period. Two patients who had angina with established auricular fibrillation improved slightly; in one who had symptoms of heart failure these also improved.

CONCLUSIONS

1. Complete rest in bed for one month or longer led to subsequent improvement in 17 out of 23 patients with angina pectoris (angina of effort). Seven of these showed great improvement and 10 slight improvement. This continued for periods of four to nine months after they had returned to habits of life comparable with those of the pre-rest period.

2. The attacks were more often decreased in severity than in frequency. They were never completely abolished following treatment by complete rest.

3. Five out of 10 patients with hypertension showed great improvement, but only 2 out of 13 with a normal blood pressure. In the former it was not associated with any permanence in the fall of blood pressure which sometimes occurred during the rest period.

4. Six patients with an anginal history of less than three months were all improved, four greatly.

5. Complete rest in bed for two to six weeks is recommended for patients with angina of effort when the attacks have not improved or are becoming worse in spite of treatment. Those with pain of

recent onset and those with associated hypertension are most likely to benefit.

We wish to thank Dr. John Parkinson, physician to the cardiac department, for help in this investigation.

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DIVINYL OXIDE ANÆSTHESIA IN OBSTETRICS *

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THE methods of preparation and physical and chemical properties of divinyl ether have been given by Ruigh and Major.[1] Leake, Knoefel, and Guedel[2] have drawn attention to its anæsthetic and general pharmacological actions in mice and dogs, Gelfan and Bell[3] have demonstrated its anæsthetic action on man, and Goldschmidt, Ravdin, Lucke, Muller, Johnston, and Ruigh[4] have made physiological, pathological, and clinical studies on the dog, the monkey, and the human.

A consideration of the rapidity with which an anæsthetic state can be reached when divinyl oxide is inhaled, the promptness of recovery and the relative safety, suggested its probable usefulness in obstetrics. Accordingly it has been administered to a number of parturient women,† concerning the first 50 of whom the following analysis is made.

The patients.—Thirty-two of the women were primiparæ and 18 multiparæ. The average age of the former was 23½ years, the youngest being 17 and the oldest 36, while that of the latter was 33½, with 25 for the youngest and 42 the oldest.

In 34 cases the *technique of administration* was that of bubbling oxygen through divinyl oxide at the rate of about 700 c.cm. per minute in a closed system with a carbon dioxide absorption attachment (Foregger). This method precludes asphyxia and waste of material. On 14 occasions the divinyl oxide was dropped on a small "open" mask in the way in which chloroform is ordinarily used. The 2 remaining patients received a mixture of nitrous oxide, vinyl oxide, and oxygen.

The operations.—The 34 women to whom a mixture of divinyl oxide and oxygen was given were treated as follows: There were 29 spontaneous deliveries, in 25 of which episiotomy was performed; three mid-forceps; one bag induction; and one Cæsarean section with sterilisation. The 14 patients who received divinyl oxide alone are divided as: 10 spontaneous deliveries, in which there were 7 episiotomies; 2 mid-forceps; and 2 low-forceps. One high-forceps operation and one low Cæsarean section were performed on patients who were anæsthetised with a mixture of nitrous oxide, divinyl oxide, and oxygen.

A preliminary period of *intermittent anæsthesia* (it is almost impossible to produce analgesia with divinyl oxide) for each earlier severe labour pain was produced in 28 of the 50 women. The average time of intermittent anæsthesia was 24 minutes, the longest being 83 minutes and the shortest 10 minutes. Six such women were given divinyl oxide alone and 22 received the drug with oxygen. The average time of continuous anæsthesia was 30 minutes, the longest taking 72 minutes and the shortest 9 minutes. The total lengths of times for all cases including intermittent and continuous anæsthesia show an average of 44 minutes per case, the longest being 109 minutes and the shortest 9 minutes.

Goldschmidt, Ravdin, Lucke, Muller, Johnston, and Ruigh[4] have shown from determinations of the concentrations in the blood necessary to produce anæsthesia, that the anæsthetic potency of divinyl oxide is four times that of ether (diethyl oxide) and greater than that of chloroform as one and three-tenths is to one. At the same time there is a wider "margin of safety" between the anæsthetic and the lethal concentrations of divinyl oxide in the blood, antithetical with those of ether and chloroform.

The rapidity with which anæsthesia is induced is very striking, a few inhalations being sufficient, there is very little excitement, any desired degree of muscular relaxation can be obtained, and recovery is very rapid. Respiration is not interfered with as much as when ether is used, and what little circulatory depression does occur compares favourably with that which occurs when ether is given. Post-anæsthetic nausea and vomiting are no more frequent than is usual in obstetrics.

Leake, Knoefel, and Guedel[2] report no gross pathological changes in the liver, heart, lungs, kidneys, and other tissues of dogs, and believe that what slight damage does occur is lessened by the use of oxygen. Goldschmidt, Ravdin, Lucke, Muller, Johnston, and Ruigh[4] report liver necrosis in dogs only after divinyl oxide had been given for three hours but none was found in monkeys. The liver necrosis seen was not so extensive as that following chloroform anæsthesia.

Since the bromsulphalein dye test for liver function is most delicate,[5] this has been carried out and the results are as follows:—

1. Primipara, aged 17. Divinyl oxide and oxygen for 51 minutes. Dye retention 18 hours later, less than 10 per cent. Dye retention 37 hours post-anæsthetic, none.

2. Primipara, aged 25. Divinyl oxide alone on a mask for 58 minutes. Dye retention 23 hours later, less than 10 per cent. Dye retention 46 hours post-anæsthetic, less than 5 per cent.

3. Primipara, aged 24. Divinyl oxide and oxygen for 60 minutes. Dye retention 24 hours later, less than 10 per cent.

4. Primipara, aged 18. Divinyl oxide and oxygen for 39 minutes. This patient was "toxic"—albumin (3 plus) and casts in the urine, and blood pressure, 160/105. Liver function was found to be normal beforehand. Dye retention 24 hours after anæsthesia, 5 per cent.

It will be seen that the administration of divinyl oxide under the circumstances mentioned is followed by very slight dye retention and consequently practically no liver damage. Two other cases are reported in which chloroform was given with oxygen in the same manner as in those of numbers one, three, and four.

(*a*) Primipara, aged 21. Chloroform and oxygen for 30 minutes. Dye retention 24 hours later, 25 per cent.

* Based on a paper read before the Montreal Medico-Chirurgical Society.

† The divinyl oxide was supplied by Merck and Co., Ltd.

(*b*) Primipara, aged 21. Chloroform and oxygen for 35 minutes. Dye retention 24 hours later, 20 per cent.

The difference between the effects of chloroform and divinyl oxide on the liver is easily seen. There was dye retention in both chloroform cases indicating definite liver damage. Further corroboration of the effects of divinyl oxide on hepatic function was obtained from experiments on dogs from which it was found that divinyl oxide causes very slight impairment of liver function in normal dogs even after repeated administrations and no added damage to those previously poisoned by chloroform.[6]

Since the compilation of these data from the above-mentioned 50 cases, 102 more have been treated with similarly successful results and it is intended to continue the use of this drug. It would seem that divinyl oxide is a very suitable anæsthetic for employment in obstetrics. It permits of rapid application, equally rapid recovery, and a satisfactory maintenance of any desired degree of narcosis with minimal danger to the mother and child. Although it is preferable that this anæsthetic be administered with oxygen, yet it may be given with relative safety by itself.

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ANEURYSM OF THE PULMONARY ARTERY

WITH REPORT OF A CASE

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ANEURYSMS of the small branches of the pulmonary artery traversing phthisical cavities are not uncommon, and their rupture is one of the classical modes of exitus lethalis for the chronic consumptive. They will not be considered in this paper. Aneurysm of the trunk or main branches of this vessel is rare, though the condition has been recognised for many years. Ambroise Paré, Fabricius Hildanus, Caesalpinus, and Lancisi all recorded cases. Henschen, in 1906, collected 46 cases; Posselt added another nine in 1909, and White and Marble ten more in 1920. D'Aunoy and von Haam in a recent paper have raised the total to 87; thus, with the cases reported by Kontjetzny and Wildhagen, which eluded these writers, and the one recorded below, 90 instances of this condition have been published since 1833.

Incidence.—An analysis of the medical post-mortem register of St. Bartholomew's Hospital for 1867–1912 shows that 13,234 examinations were made, including 350 cases of aneurysm of which none affected the pulmonary artery or its main branches. Crisp, in 1847, mentioned a specimen of pulmonary aneurysm then in St. Bartholomew's Hospital museum, but this cannot now be traced. In the post-mortem records of the medical examiner for the City of New York no cases occurred in over 10,000 autopsies performed in the years 1918–24. Crisp found two cases in 530 specimens of aneurysm and Klotz none in 1000.

Ætiology.—The assessment of the parts played by various ætiological factors in the causation of pulmonary aneurysm is difficult, as the majority of cases on record were reported before the days of exact histological examination and the Wassermann reaction. The syphilitic factor is certainly less important that in aortic aneurysm, though several undoubted syphilitic aneurysms are recorded. Warthin has demonstrated the spirochæte in the aneurysmal wall in one case, while those reported by Pissot, Foster, and Neuberger are certainly syphilitic in origin.

However, it is probable that atheroma and septic endocarditis occupy pride of place as causative factors. In these cases there is frequently some congenital anomaly of the cardiovascular apparatus, which leads either to a raised arterial pressure in the pulmonary circuit or affords a suitable nidus for septic infection of the endocardium of the right side of the heart. Pre-eminent among such anomalies is a widely patent ductus arteriosus; this was present in 22 out of the 90 cases, in these the resulting atheroma of the pulmonary artery was undoubtedly the cause of the dilatation. In the septic cases the aneurysm may arise by extension of the vegetations—usually on a congenitally abnormal pulmonary valve—causing a localised septic endarteritis or as a true embolic mycotic dilatation as probably occurred in the cases of Fletcher and Dowse.

Two of the cases were traumatic in origin, resulting from bullet wounds of the chest (White and Marble, Kontjetzny). The case reported by Reiche appears to be due to infection of the wall of the pulmonary artery from its pericardial aspect, from actinomycosis involving the pericardium, left lung, and left pleural cavity.

Clinical features.—Diagnosis during life in such cases is hardly to be expected; for, where symptoms arise, they are usually those of mediastinal tumour and as such indistinguishable from those of aortic aneurysm. Henschen, however, states that in "one or two" cases the diagnosis was made before death.

The age-incidence is younger than that of aortic aneurysm, and the sex-incidence is roughly equal. The clinical course is of interest: about half the cases die a sudden death from rupture of the aneurysm into the pericardium or pleural cavity, of the remainder the majority die of congestive heart failure, and the others from septic endocarditis or occasionally some intercurrent affection.

CASE REPORT

An advertisement canvasser, aged 48 years, was admitted to St. Bartholomew's Hospital on August 10th, 1929, with 18 months' history of increasing dyspnœa. For two months before admission his feet had been swollen, while more recently he had had a cough with frothy sputa.

Past history.—Syphilis, aged 24 years. Hæmatemeses aged 35 and 37 years. Gout since age of 43 years. Temperate in habit. Married; wife has had one abortion and eight healthy children.

On examination.—A largely built man, cyanosed and apyrexial. Respiratory frequency 24 per minute. Tophi in both ears. Apex-beat in VIth left space 5½ in. from midline (1½ in. outside mid-clavicular line); apical impulse not heaving. Localised diastolic thrill just medial to apex-beat. Area of cardiac dullness not beyond right border of sternum. Sounds: rough diastolic bruit, heard best just medial to apex-beat and conducted upwards and to the right, otherwise normal. Radial pulses: equal and synchronous; 90–60 per minute; rhythm regular; wave of normal character. Artery tortuous. Blood pressure 145/100. Lungs: medium râle at both bases. Liver: palpable two finger-breadths below costal margin. Œdema of legs and lumbar region.

Laboratory investigations.—Urine: output normal; trace of coagulable protein. Blood: red cells, 9,110,000 per c.mm.; Hb., 95 per cent.; colour-index, 0·5; white cells, 6200 per c.mm. Wassermann and Sigma reactions: negative. Blood uric acid: 5·5 mg. per 100 c.cm.

Electrocardiogram.—Right axis deviation.

Radiogram of chest.—(Radiologist's report): The heart is greatly enlarged; the left pulmonary artery region showing a convexity instead of a concavity. The aortic arch is also much wider than normal. Below the right hilum there is a dense shadow 12 by 7 cm., with well-defined outline. The left hilum also shows a dense shadow projecting laterally from that of the heart, roughly circular in shape, with well-defined outline.

Progress.—He improved greatly with rest in bed and digitalis, and was discharged from hospital on Sept. 3rd, 1929. He remained well until January, 1932, when he was admitted to another hospital with congestive heart failure; he improved and was discharged in April, but signs of heart failure returned, and he was readmitted to St. Bartholomew's Hospital on July 13th, 1932.

Final illness.—On readmission he was deeply cyanosed and orthopnœic; respiratory frequency 30–35 per minute. Heart: apex-beat in VIth left space 6¼ in. from midline; no diastolic thrill; sounds unchanged except diastolic murmur now soft. Radial pulse: 86 per minute. Allorhythmia, but no apex-radial deficit. B.P. 137/98. Lungs: œdema of both bases. Liver: four finger-breadths below costal margin. Ascites. Œdema of legs, thighs, scrotum, and lumbar region. Urine: output reduced; coagulable protein, 0·02 g. per 100 c.cm. Blood: red cells, 6,000,000 per c.mm.; Hb., 105 per cent.; C.I., 0·9; white cells, 7400 per c.mm. Electrocardiogram: right axis deviation; auricular flutter (rate 200 per minute), with varying 2:1 and 3:1 block. Ventricular rate 96 per minute.

Under treatment his condition remained unchanged until on August 13th, 1932, he asked for a drink of water and suddenly fell back dead.

AUTOPSY

The findings in the thoracic viscera only will be described, as beyond this they were those common to all cases of chronic congestive heart failure. No congenital or developmental anomalies were present apart from those in the heart.

The heart was much enlarged, owing to the great size of the right ventricle. The right auricle was dilated to three or four times its normal size; the muscle was hypertrophied. The foramen ovale was closed. The tricuspid valve admitted four fingers, the cusps were thickened. The right ventricle was dilated to two or three times its normal size, the wall was hypertrophied and varied in thickness from 2·0 to 2·5 cm. There was no defect of the septum interventriculare. The cusps of the pulmonary valves showed old vegetations at the line of closure; these were somewhat larger than the usual verrucous vegetations. Beyond the valve the pulmonary artery was dilated to a diameter of 2·5 cm., and continued as a widely patent ductus arteriosus to open into the aorta 1·5 cm. distal to the origin of the left subclavian artery. The right and left pulmonary arteries arose from the main trunk midway between the pulmonary valve and the aorta; the left pulmonary artery, immediately after its origin, was dilated to form a saccular aneurysm which measured 7·0 × 8·0 × 8·0 cm., and lay for the great part embedded in compressed lung tissue. The right pulmonary artery, after a course of 3·0 cm., was found to show a similar dilatation, ovoid in shape, measuring 11·0 × 8·0 × 6·0 cm. This lay in the lung parenchyma, closely related to the right main bronchus. Both sacs were almost completely obliterated by adherent laminated clot. The intima of the main pulmonary artery was healthy, and the ductus arteriosus and the vessels of the lung showed no disease apart from the two aneurysms.

The left auricle was small and the mitral valve normal. The left ventricle was smaller than normal and considerably smaller than the right, the thickness of its wall varied from 2·0–2·5 cm. The aortic valve was of normal size and the cusps slightly thickened. The ascending aorta was of slightly smaller calibre than normal, its intima was healthy. The coronary arteries arose normally and showed slight atheroma. Immediately proximal to the point of entry of the ductus arteriosus the lumen of the aorta was narrowed to a diameter of 1·2 cm.; around this stenosis were one or two patches of atheroma. The innominate and left common carotid arteries arose from a common trunk 1·5 cm. in length.

Histologically the walls of the pulmonary aneurysms showed advanced degeneration of the muscle coats with atheroma; there were no changes to suggest a syphilitic origin. The vegetations on the pulmonary valve were fibrotic and partly calcified; they were so structureless as to make it impossible to state their original nature.

Diagnosis in this case was limited to "congenital morbus cordis" before death; autopsy revealed a patent ductus arteriosus associated with some degree of coarctation of the aorta and large saccular aneurysmal dilatations of the right and left pulmonary arteries. The underlying pathological process appears in this case to have been atheroma.

My thanks are due to Lord Horder for his kind permission to record this case, and to Prof. E. H. Kettle for allowing me access to the post-mortem register of St. Bartholomew's Hospital.

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Bournemouth.

A CASE OF MYELOMATOSIS

BY H. K. GOADBY, M.D. Camb., M.R.C.P. Lond.

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IT is in view of a difficult clinical diagnosis that the following case is reported.

In June, 1933, was admitted to St. Thomas's Hospital a married woman of 52, complaining of weakness, loss of weight, and abdominal pain. Apart from mammary carcinoma in her mother her family history was healthy; she had had no children. She had had frequent quinsies, but otherwise had always been very robust until three years ago (1930), when she started to have peculiar pains in her chest, usually brought on by exertion; these commenced in her left side and gradually spread round the lower part of her thorax.

A year ago she noticed that she was getting pale and also short of breath on exertion, and at the same time she began to have epistaxis at infrequent intervals. She lost her appetite, especially for meat. Her symptoms of constipation and hæmorrhoids, which she had had since childhood, did not get any worse. She first consulted a doctor at Christmas, 1932, as she was getting very pale, vomiting, and losing weight, with vague abdominal pains; she had a sore-throat which resulted in some degree of dysphagia. Her tongue had never been sore. The pallor and weakness became progressively worse up to her admission to hospital.

Examination showed a frail woman, obviously wasted, with a pale, lemon-yellow complexion contrasting strongly

with her pink lips and the multiple small telangiectases on her cheeks. Physical examination was strikingly negative; the conjunctivæ were lightly jaundiced, the mucous membranes pink, the tongue was moderately smooth, but not characteristically glazed. A basal systolic murmur was attributed to her obvious anæmia. Neither spleen nor liver nor any enlarged glands were felt. A blood count showed 1·5 million red cells with a colour-index of 1·1, marked anisocytosis and poikilocytosis; no Price-Jones curve was done. There were 2800 leucocytes with 65·5 per cent. of polymorphs. Reticulocytes 1 per cent.

Radiologically the stomach showed no emptying even after six hours; there was some prepyloric deformity, but the duodenal cap could be easily filled by hand. Gastric contents showed no hydrochloric acid, even after 0·1 mg. of histamine injected subcutaneously. Stools had a small amount of occult blood, possibly due to hæmorrhoids or epistaxis. An opaque barium enema showed a distensible but otherwise normal colon. There was a very variable degree of albuminuria, a blood-urea of 54 mg. per 100 c.cm., a blood pressure of 110/74.

To summarise, a woman at the menopause with a hyperchromic anæmia, achlorhydria, leucopenia, a suspicious gastric radiogram, and multiple telangiectases, who was obviously rapidly wasting. What was the cause of the anæmia?

In spite of the leucopenia (the leucocytes rose later to 7800 per c.mm. and 81 per cent. polymorphs), secondary malignant disease of bones was thought to be the most likely cause. Radiograms of all the bones taken showed areas of rarefaction, which in the skull had a peculiar punched-out character (Fig. 1); in the femora these areas were less well-defined. The skull on subsequent palpation felt quite smooth and normal, without any lumps, as did the femora. No palpable expansion on the ribs was noted, nor any tumour in the sternum, though no specific search was made for these. Liver extract and liver diet produced no increase in the reticulocytes after ten days; as they nauseated the patient and increased her already severe vomiting liver treatment was abandoned.

Her condition remained apparently stationary until August, 1933, when she suddenly developed broncho-pneumonia and died. Post-mortem examination was performed 18 hours after death by Dr. J. L. Edwards, to whom the following report is due.

The stomach and intestines were macroscopically normal. The left ovary contained a dermoid cyst about the size of an orange; this cyst contained bone and a tooth. The left kidney contained a small calcified mass surrounded by caseous debris; but there was no evidence of tuberculosis elsewhere. On section this area showed necrosis surrounded by a zone of fibrous tissue; there was no positive evidence of tuberculosis.

Breast and uterus normal; heart normal; gross œdema and congestion filled the lung bases.

FIG. 3.—Post-mortem radiogram of sternum and a rib.

In the skull were a number of purple patches of various sizes on an average about that of a pea. These showed more obviously through the inner than the outer lamina; they were obviously situated in the medulla, but had scarcely expanded the tables. Incision of these patches with a knife showed material resembling dark splenic pulp with Malpighian corpuscles. In several ribs, clearly centred in the medulla and expanding the ribs to a fusiform swelling, were similar purple areas of the same spleen-like structure and "Malpighian bodies." These swellings had "egg-shell crackling." In the sternum was a large patch about the size of an egg, expanding it outwards and inwards. The left clavicle and iliac bones also contained similar purple areas. The vertebræ were apparently unaffected. Post-mortem radiograms of the skull, sternum, and a rib are given in Figs. 2 and 3.

Microscopically these areas or tumours were found to correspond with the plasma cell type of myelomatosis (plasmacytoma). Fairly large oval cells are arranged with no particular regularity; they contain

FIG. 1.—Radiogram of the skull during life.

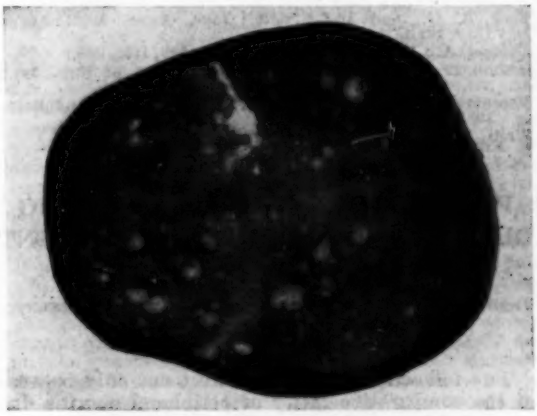

FIG. 2.—Radiogram of skull after death.

a round coarsely stippled nucleus which is eccentric. There are some giant cells with 2 or 3 nuclei; some very large nuclei are seen. Megaloblasts and normoblasts were quite plentiful; the spaces between the tumour cells were filled with red blood corpuscles apparently lying free, as no blood-vessel wall could be made out. The camera lucida drawing (Fig. 4) demonstrates the various characteristic cells present.

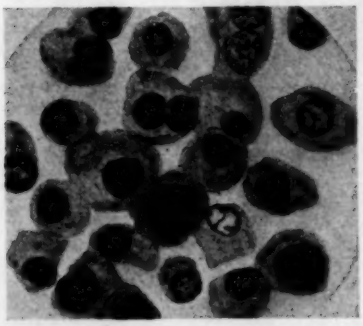

FIG. 4.—Characteristic area of tumour cells in a rib.

The final diagnosis therefore was "multiple myelomatosis." According to the very complete review of multiple myelomatosis given by Geschikter and Copeland, out of 425 cases reported up to 1928 only three had true pernicious anæmia blood counts—i.e., a high colour-index anæmia with a leucopenia. Twenty-six cases out of the 70 reported with complete blood counts had a high colour-index. Previous cases of severe hyperchromic anæmia with normal leucocyte counts have been reported by Beck and McLeary, Ellinger, Wadi, and recently by Rosenheim and Payling Wright. This scarcity of macrocytic, normoblastic or megaloblastic anæmia is interesting in view of the suggestion originally put forward on histological grounds by Ribbert, that these tumours are really erythrocytomas or erythroblastomas.

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PERIPHERAL NEURITIS OCCURRING DURING ANTISYPHILITIC TREATMENT

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The following case is of interest not only because of the comparative rarity of peripheral neuritis due to organic arsenical preparations, but also because the neuritis was associated with jaundice—an association which has apparently never been recorded before.

History.—The patient, a man 48 years of age, presented himself in November, 1932, with a primary chancre of one month's duration. *S. pallida* was present, and the Wassermann and Kahn reactions were strongly positive. Treatment was begun at once, but, owing to his age and his undersized physique, large doses of Novarsenobenzol were not given. Nevertheless, between Nov. 28th and Feb. 22nd he received 4·35 g. of novarsenobenzol in weekly injections, the highest individual dose being 0·6 g. He also received 4 g. of bismuth, in the form of intramuscular injections of bismuth oxychloride, given at the same time as the novarsenobenzol. The Wassermann and Kahn reactions were negative on Jan. 25th, and the sore was healed. On March 21st, after an interval of one month, a second course of treatment was started and continued until May 17th. On that day, when he had received 3·3 g. of novarsenobenzol and 2·4 g. of bismuth, he complained of feeling very depressed, and reported that he had lost seven pounds of weight in the last three weeks. He looked slightly sallow, and urobilin was present in the urine. Accordingly, active treatment was discontinued. He was, however, given pil. hydrarg. iod. virid. gr. ½ three times a day, and told to report at regular intervals.

It transpired later that since the beginning of his treatment he had suffered from severe shooting pains, "like red-hot irons," in both legs, especially the right; but at the time he made no mention of the fact.

On June 17th the patient went to a cinema; when he tried to rise at the end of the performance he found himself unable to stand. When assisted to his feet, however, he was able to walk home with support. He was brought up to the clinic the next day, and transferred to the medical wards under the care of Dr. A. F. Hurst.

Condition on admission.—There was no pyrexia. The patient was slightly jaundiced, and the edge of the liver was palpable an inch below the costal margin. There was a blue line along the margins of the gums, and some septic roots. Some slight desquamation was present on the palms of the hands. No other skin lesion was present.

There was severe bilateral foot-drop, power of dorsiflexion being almost absent on the right and greatly impaired on the left side. Extension of both wrists was also impaired. The muscles of both calves were markedly tender. Cutaneous sensation was normal, except for slight impairment to pin-prick on the outer side of both thighs. The ankle-jerks were absent and the knee-jerks were very sluggish. The plantar responses were flexor and all reflexes in the arms were normal. The gait was unsteady, and the feet were lifted high off the ground on walking. Sphincter control remained normal.

The Wassermann reaction was negative, both in the blood and cerebro-spinal fluid, which was also normal in all other respects. The blood count was normal, and there was no punctate basophilia. The van den Bergh test gave a strong indirect positive reaction. The urine was normal, apart from the presence of urobilin.

Treatment consisted merely in rest in bed and splinting of the feet in a position of dorsiflexion. Improvement was surprisingly rapid, and on July 13th the patient was discharged. On that day the tendon reflexes were all brisk and equal, and there was no weakness. The jaundice had disappeared and the van den Bergh reaction was negative. When last seen, on Sept. 4th, the patient was walking normally, but still tended to get slight cramp in his legs after much exertion.

This case was clearly a typical one of acute polyneuritis, and it only remains to discuss the cause.

The patient had worked with lead as a young man, but had had no contact with it for 20 years, except for three days, a year previously, when he was painting his house. Lead is therefore most unlikely as a cause of the condition, especially in the absence of punctate basophilia. The blue line, of course, is far more easily explained as being due to the bismuth injections. Alcohol is also unlikely as a cause, since, although the patient had been drinking two quarts of beer a day for some years, he had given it up entirely since coming under treatment for syphilis. Diabetes mellitus can be excluded by the absence of sugar in the urine on repeated examinations, and the patient had had no inorganic arsenic. Syphilis itself, as a possible cause, is very unlikely owing to the condition occurring so shortly after the cessation of treatment. The negative findings in the blood and cerebro-spinal fluid, and the fact that the neuritis cleared up spontaneously, would also be strongly against this diagnosis. Other possible causes having been excluded, it is evident that the condition must be considered to have been due to one of the drugs used in the antisyphilitic

treatment. The patient was, at the same time, suffering from other toxic effects due to arsenobenzol, and also possibly to bismuth, that is to say, from jaundice and gingivitis.

Polyneuritis, undoubtedly caused by bismuth, is even rarer than that caused by arsenobenzols; in fact, I have discovered only one case recorded. In 1926 Macdonald Critchley[1] reported a case occurring in a woman of 38, who was receiving injections of bismuth, and who never had any arsenobenzol. The neuritis cleared up rapidly as soon as the injections were stopped. In this case, however, the kidney function was known to be very poor, and the bismuth may be presumed to have been slowly and perhaps imperfectly eliminated. No such factor complicated the present case, and it would probably be safe to consider it as due to the organic arsenic.

Beeson,[2] in 1920, summarised the literature of arsenobenzol polyneuritis up to that date, adding a case of his own. Most of the cases quoted (about 15 in number) occurred in patients who had tolerated the injections badly, and over half were associated with severe exfoliative dermatitis. Beeson's own case was that of a negro, aged 42, who was also a heavy drinker. He had a very severe dermatitis which lasted for some months, and from which he nearly lost his life. The polyneuritis, with complete bilateral foot- and wrist-drop, occurred concurrently with the dermatitis, and recovery was complete. Another case quoted is one reported by Spillman in 1914. In this case, polyneuritis of both legs occurred five weeks after the patient had received two injections, both of which had been followed by severe immediate reactions; unilateral paralysis of the facial nerve appeared shortly after, recovery being complete. Beeson draws an analogy between the cases in which polyneuritis was associated with exfoliative dermatitis, and certain cases which occurred in an outbreak of inorganic arsenical poisoning in 1904, caused by accidental contamination of beer. In a few of these cases an apparently identical condition was described.

The rarity of arsenobenzol as a cause of polyneuritis can be gathered from the fact that only one case recorded since Beeson's paper appeared has been found. This was one reported by Urechia and Dragomir[3] in 1932. The patient was a woman of 49, with latent syphilis. She never tolerated the injections well, and suffered from "nitritoid" crises and cutaneous eruptions. The polyneuritis developed after one and a half courses of treatment, and cleared up very slowly.

It is worthy of mention that in none of the reported cases was there any note of the occurrence of jaundice in association with polyneuritis. In the case under consideration this was a conspicuous feature, while the only evidence of cutaneous involvement was the slight desquamation of the palms of the hands. While the patient suffered from no definite reactions following the injections, his health did undoubtedly deteriorate during the treatment, and, judging after the event, it certainly appears that the injections should have been discontinued earlier.

I wish to express my thanks to Mr. V. E. Lloyd, director of the venereal diseases department at Guy's Hospital, for his help and criticism, and to Dr. Hurst, under whose care the patient was admitted, for permission to publish the case.

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SIMULTANEOUS BILATERAL TUBAL GESTATION

By G. F. Langley, M.B. Brist., F.R.C.S. Eng.
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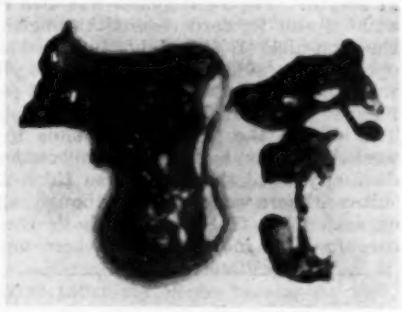
A woman, aged 33, was admitted to hospital as a case of "acute abdomen, possibly ruptured ectopic."

History.—She had two children, aged 7 and 9, and had had one miscarriage 11 years ago, after which she had "gone septic." For four weeks she had complained of vague colicky pains in the lower abdomen, accompanied by nausea and flatulence for which she had been given medicine. For three weeks she had been losing slightly per vaginam, but as she had not passed any clots nor had much pain she had not told her doctor. Ten hours before admission she had had violent pain in both iliac fossæ accompanied by frequent vomiting and faintness. For the past four hours her pain had been most violent over the points of both shoulders, and she said she was almost afraid to breathe. Since the onset she had noticed a very frequent desire to pass urine, but there was no pain and little was passed each time. Her menstrual periods occurred regularly for three days each month, but the loss was always scanty; there was a leucorrhœal discharge. Her last normal period had been exactly two months ago, and last month menstruation had occurred at the proper time but had only lasted for one day. She started losing again six days later, and had continued to do so until admission. The onset of the severe attack coincided with the day on which she expected her period.



Reproduction of photograph of Fallopian tubes and fœtuses after removal. On the right side (left-hand photograph) the fœtus is enclosed in an amniotic sac and its placenta is seen protruding through an opening in the ampulla of the tube. On the left side (right of Figure) the amnion has ruptured and the placenta is lying beneath the tubal rupture. There is a small fimbrial cyst at the abdominal ostium.

On admission the temperature was 99·4°, the pulse-rate 120, and the respiration-rate 32. The patient was pale, cold, and clammy, her breathing was short and catchy, and her chief complaint was of pain over both acromial regions. The chest showed no adventitious sounds and normal percussion note, though there was deficient movement and air entry at both bases. The abdomen was markedly distended, especially in the right iliac fossa; there was no rigidity but exquisite tenderness in both iliac zones and along the right flank. There was dullness on percussion in the pelvis and right flank and elsewhere a hyperresonant note. Vaginal examination revealed a slight loss of dark blood and a large, boggy, tender mass filling the right side of the pouch of Douglas.

Operation.—A diagnosis of ruptured ectopic gestation—right side—was made, and, owing to the respiratory embarrassment, the abdomen was opened under spinal percaine anæsthesia. A full pint and a half of blood was sucked out of the abdomen, and this was found to be coming from the left Fallopian tube. A fœtus about 5 cm. long was found lying in a complete bag of membranes attached by an amniotic stalk to a small placenta which was partly extruded through a ragged hole in the left tube. The hæmorrhage was coming from the ovarian artery which had been eroded. The left tube was rapidly removed and the stump invaginated. The fœtus and its

placenta fell away from the tube during the removal, and the amnion was ruptured.

Routine examination of the right tube revealed a fœtus of the same size as that on the left, enclosed in a complete amniotic sac, 1½ in. in diameter, and attached by an amniotic cord about 1½ in. long to a fungating placenta-like mass protruding through a hole about 1½ in. in diameter situated in the ampulla of the right Fallopian tube. There was no hæmorrhage from this tube but it was distended to enclose the placenta, its diameter being about 1½ in. The right tube was also removed and its stump invaginated.

Examination of both ovaries revealed well-marked corpora lutea on both sides; the ovaries were healthy and were left in situ. Blood and clots were removed from the peritoneal cavity and the wound was closed. The patient recovered rapidly, and within six hours her shoulder pain had disappeared. Twenty-four hours later she complained of severe occipital headache and pain in the cervical spine; this lasted for two days and was thought to be due to the spinal anæsthetic. She made a normal recovery and was discharged on the eleventh day.

The pregnancies in the two tubes were of the same size and development and were identical in all macroscopic features; each measured about 5·0 cm. in length. The right fœtus was still enclosed in its amnion and its cord entered through an opening in the ampulla of the right tube, smaller than the opening in the left tube, to join the placenta, which was still adherent to the interior of tube and which bulged out through the opening in the tubal wall. The size of the fœtus corresponds to about a ten weeks' gestation: the placenta should not be formed distinctly until the end of the third month, but in this case there was a definite, though ragged, placenta on each side. The fact that both ovaries contained corpora lutea indicated that there must have been simultaneous ovulation and fertilisation on the two sides.

Eden and Lockyer[1] state that, up to 1927, only 28 cases of simultaneous binovular tubal gestation had been recorded. They classify cases of multiple ectopic pregnancy into three groups:

1. Coincident intra- and extra-uterine pregnancy: the commonest type.

2. Multiple pregnancy in a single Fallopian tube: a case described by Treub containing quintuplets in one tube.

3. Coincident pregnancy in each tube: (*a*) cases of consecutive gestation in which there may be symptoms of attacks of pain first on one side of the pelvis and later on the other; (*b*) cases of simultaneous ectopic pregnancy (the rarest type) of which they could only find 28 cases.

Doran has shown that in cases of ectopic gestation in one tube the opposite tube may be the site of a hæmatosalpinx which may be mistaken for an ectopic pregnancy unless subjected to microscopical examination.

This case emphasises the necessity for the examination of the ovaries and tubes on both sides during an operation for ruptured extra-uterine pregnancy. The accompanying photograph, for which I am indebted to Mr. William Walsh of the radiographic department of this Infirmary, shows the two Fallopian tubes with the attached cords and fœtuses; on the left side the placenta is lying beneath the site of rupture of the tube, while on the right the placenta is still enclosed within the tube. The amniotic fluid from the right sac, which had been removed intact, began to leak away while the photograph was being taken.

I wish to thank Mr. Walter Briggs for permission to publish this report.

[1] Eden, T. W., and Lockyer, C.: Gynæcology, London, 1928.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTIONS OF MEDICINE AND SURGERY

THESE sections met on March 7th, with Prof. G. E. GASK, president of the section of surgery, in the chair, to discuss the subject of

Hæmatemesis

Dr. ADOLPHE ABRAHAMS said that its most common cause was peptic ulcer, chronic or acute. About 20 per cent. of gastric ulcers and 25 per cent. of duodenal ulcers caused hæmatemesis or melæna or both. Among other gastric causes were carcinoma, and the rare innocent tumours (papillomata, myomata, nævi, and angiomata). Hæmatemesis was a common and early symptom of cirrhosis of the liver and was a cardinal feature of splenic anæmia; the stomach was also apt to be the site of bleeding associated with a hæmorrhagic diathesis.

Since a similar discussion ten years ago the technique of blood transfusion had improved and its therapeutic range had extended. Administration of iron salts for the secondary anæmia of hæmatemesis had become more efficient, and the profession had learned to accept with comparative equanimity a degree of anæmia which at one time would have induced panic, and an urge to some desperate life-saving measure. It was a familiar experience to see patients with less than 20 per cent. hæmoglobin who showed a tolerably comfortable adjustment to it. The chief discussion must refer to the comparative risks of hæmatemesis and of operations on exsanguinated patients. There was considerable difference of opinion as to mortality-rates. At Guy's Hospital from 1911 to 1920 there were 23 deaths from hæmatemesis in 600 cases, and Stewart's figures gave a similar percentage. It was important to be able to identify which sufferers would eventually die if left without operation, for a proportion of these would certainly be saved by operation. The patients who died were those who had continued or recurrent bleeding; the single large hæmorrhage seldom killed. The older the patient, the higher the mortality, males being in the greater danger. One might therefore say that an indication for operation during hæmorrhage was the occurrence of bleeding from an ulcer in a patient whose arteries were so degenerate that they were unlikely to contract enough for a satisfactory plugging by thrombosis. Yet the position was not so simple; for were there not other acute lesions in which hæmorrhage could not be stopped by so-called medical measures? Apart from surgical emergencies, there was the question of operating to obviate possible future hæmorrhages. Some patients with ulcer seemed to have a special tendency to bleed, and women, as a whole, bled more readily than men. Hurst maintained that the liability to hæmorrhage was as great after an operation for peptic ulcer as after medical treatment. With that he thought all would agree. At the previous discussion the chairman, Dr. Robert Hutchison, said he believed that ten years later the pendulum would have swung towards surgery—i.e., direct attack on the bleeding point. Surgery had no other place in the treatment of hæmatemesis, except when splenectomy was advisable.

Mr. G. GORDON-TAYLOR said that the surgeon must think very carefully before operating during an acute hæmorrhage from the stomach. An

enormous array of pathological conditions might be responsible for hæmatemesis, and every care must be taken to diagnose the cause, for the only event which justified urgent surgery was bleeding from a chronic ulcer.

Should surgery be employed to prevent the hæmorrhage of gastro-duodenal ulceration? The reply depended on the incidence of hæmorrhage from ulcer, the risk to life of such hæmorrhage, and the likelihood of death from operation. Statistics varied enormously in this respect; whereas Conybeare stated that only 2 per cent. of patients with ulcers which bled died of hæmorrhage, Ernest Bulmer, of Birmingham, reported that of 249 cases of hæmatemesis due to chronic peptic ulcer, 29 died. The mortality from hæmatemesis among cases of chronic ulcer of stomach of duodenum which were treated medically at Middlesex Hospital from 1924–33 amounted to 24 per cent.—a proportion almost identical with that obtained by A. M. Cooke from the St. Thomas's figures; in the Middlesex cases in which a second large hæmorrhage occurred the mortality was 78 per cent.; with each successive bleeding the death-rate mounted higher. This indicated the need of surgery before a second hæmatemesis occurred. It was more convenient for all to operate between the hæmorrhages, but there was always the uncertainty whether the hæmorrhage would stop and when it would cease. Dr. Robert Hutchison, quoting Mr. Sherren's practice, did not advise operation during bleeding, but recommended it not longer than 48 hours after the bleeding had stopped. Finsterer, however, regarded bleeding from a chronic ulcer as an imperative indication to operate. In the Middlesex series no fewer than six died of hæmatemesis while having intensive medical treatment for ulcer.

When operating for urgent hæmatemesis the decision should be made at once, since delay increased the risks; and unlimited blood must be available for transfusion. If possible the operation should be done under local anæsthesia. If there was much blood in the intestine, cæcostomy should be carried out, with lavage of the large bowel.

From 1919–24 he had operated on 22 cases of active hæmorrhage from chronic ulcer of the stomach or duodenum, and had saved 20—a mortality-rate of 9 per cent. Although the figures had not been so good in the year or two following, the mortality-rate of all cases of acute hæmatemesis from 1919–26 dealt with by surgery was 19 per cent. His plea was for closer coöperation between physician and surgeon in the care of these anxious cases, and that if anything surgical were contemplated, it should be done in the first 24 or 48 hours. Early enterprise was the prelude to success.

Dr. T. IZOD BENNETT said he thought it lamentable that there should still be so little close coöperation between the surgeon and the physician when dealing with these difficult and alarming cases, though many of the difficulties related to diagnosis of the cause of the bleeding. The cases in which surgical aid should be sought at once were those in which it was clear that the blood came from a chronic ulcer, especially those in which there was stenosis of pylorus or duodenum. The vast majority of hospital cases of hæmatemesis ought not to have been admitted to hospital at all; it was a grave responsibility to have a patient with hæmatemesis moved to hospital, unless the accident happened in the street, or the home surroundings did not permit of effective nursing. Statistics of the comparative mortality of operation and medical treatment were misleading because of the great variation in the cases. In the last ten years he had had 7 fatal cases; in about 300 cases which he had seen in that period the indications for surgery were very rare. Hæmatemesis must always be regarded as a grave emergency, and the patient should be treated as carefully as if he had undergone a severe abdominal operation. Not until a week had passed should the physician feel anything but anxiety; yet often such cases were treated with a lack of care which amounted to levity. The first step in the treatment was discontinuance of food or drink by mouth, if the case was at all dangerous, for 36 to 48 hours; next the patient should be given some drug of the morphia group, in quantities sufficient to induce twilight sleep, and be kept in a state in which not only was he not suffering from absence of food or drink, but did not notice that they had been withdrawn. Saline should then be given rectally, and the nursing should be continuous, the amount of liquid and food depending on the regular examination of stools for occult blood. Very rarely was a surgical operation indicated. It was better to face the risk of recurrent hæmorrhage without moving the patient than to move him to hospital with the view to operation. When commencing to give fluid by mouth, it should not be milk, nor glucose and lemonade, but isotonic saline.

Mr. JOHN MORLEY (Manchester) held that treatment of bleeding from an acute ulcer was the province of the physician; surgical intervention would deprive the patient of his chance of recovery. Only in dealing with chronic ulcer was there a difference of opinion. Of 330 patients with acute ulcer bleeding treated in Manchester Royal Infirmary in ten years, 40 died, a mortality of 12·2 per cent. Of all cases of chronic ulcer admitted to hospital for hæmatemesis, about 10 per cent. died. What should the surgeon do when he had a patient who was vomiting blood profusely from a chronic ulcer or was collapsed from a recent hæmorrhage? The question could not be answered by a recourse to statistics, but post-mortem examinations on these cases usually showed that a large vessel, usually an artery, had been eroded and was open on the ulcer front. Patients did not usually die after their first hæmorrhage, but succumbed to a series of severe bleedings. He did not think operation should be done on collapsed or exsanguinated people; and yet the surgeon should not resign these cases to the physician with the intimation that, if all went well, he would do something operative in two or three months' time. After severe hæmorrhage, operation should be done as soon as it was reasonably safe. He agreed with Mr. Gordon-Taylor that operation should consist of a direct attack—no such measures as gastro-enterostomy. The surgeon alone had the experience which enabled him to judge when a patient could stand operation. Lives were sometimes lost by cases of this gravity having been left for hospital residents to deal with. In cases of post-operative hæmatemesis he found the usual cause was that the sutures had been placed too far apart. Remote post-operative hæmorrhage was usually from an anastomotic ulcer. He did not operate on these cases until the anæmia from the hæmorrhage had been cured.

Dr. R. S. AITKEN spoke on the treatment of grave hæmatemesis. When a patient had vomited so much blood that he seemed likely to die from exsanguination, there were three main lines of treatment: (1) purely medical—i.e., complete rest, morphia by mouth but

nothing else; (2) medical plus transfusion; (3) surgical. Of 253 cases of hæmatemesis from gastric or duodenal ulcer treated at London Hospital, 25 died, a mortality of 10 per cent. For statistical purposes mild cases which did not cause anxiety should always be separated from the severe ones. The figures he had been able to collect gave him the impression that in grave cases with a red cell count of less than two million, especially if the bleeding continued, with the patient at rest in hospital, transfusion should be done, if necessary, more than once. Operation should be regarded as a last resort.

Prof. C. A. PANNETT differed from those who believed that surgery should be reserved for cases with repeated hæmorrhages. When the patients had got worse and worse, when they had lost 80 per cent. of their hæmoglobin, then surgery should be absolutely excluded. When a man was known to have gastric ulcer, surgery should be considered from the beginning of the hæmatemesis; by which he did not mean that every case should be operated on early, but that a deliberate choice should be made between medical and surgical treatment. An exsanguinated patient was not in a position to stand an operation. When the patient had lost half his blood, operation might be done, but not in the collapse immediately following a big hæmorrhage.

Dr. GEORGE GRAHAM said that in cases of very severe hæmatemesis it might be necessary to give two or three transfusions of blood; one of his patients had had six. When a person had lost much blood and the hæmoglobin was below 40 per cent., blood must be supplied. On the day after the transfusion the hæmoglobin might have dropped to 33 per cent. or even 29 per cent., but that, he thought, was because the patient had been able to dilute his blood.

Mr. H. J. PATERSON contended that very few of the cases of severe hæmatemesis from ulcers proved fatal if given adequate medical treatment. At the previous discussion he reported a series of 120 severe cases of acute or chronic ulcer hæmorrhage with no deaths; they were under the care of Dr. J. Porter Parkinson and Dr. Soltau Fenwick, and the latter declared he had never seen fatal hæmorrhage from gastric or duodenal ulcer. Since then, however, the speaker had had three fatal cases. One was a hæmorrhage ten years after a gastro-enterostomy for duodenal ulcer; the patient came in with severe melæna and died, and the autopsy next day revealed no cause for the hæmorrhage. Another patient came to hospital after two or three severe hæmorrhages, and was doing well under medical treatment, when he reached for something off the floor, had a severe hæmorrhage, and died in a few hours. These patients should not only have complete physical rest, but also rest to the stomach. Recurrent hæmorrhages were admittedly dangerous, but under adequate medical treatment there should be no repetitions of hæmorrhage. Bleeding from an eroded ulcer was very rare; mostly the bleeding arose from a general stomach oozing. Surgery in the face of acute hæmorrhage was very rarely justifiable.

KENT AND CANTERBURY HOSPITAL.—The number of patients admitted last year was 2256, an increase of nearly 10 per cent. There were 137 available beds, and the average daily number occupied was 113·5. Residence averaged 16·5 days, a fall of two days on the preceding year. The average total cost of each patient was £6 15*s.* 6*d.*, and the average weekly cost of each in-patient £2 12*s.* 1*d.*

MEDICAL WOMEN'S FEDERATION

AT a meeting held on Feb. 20th, with Prof. M. F. LUCAS KEENE in the chair, Dr. ANDREA ANDREEN-SVEDBERG opened a discussion on the

Swedish Approach to the Problem of Diabetes

The first thing she did with her diabetic patients, Dr. Svedberg said, was to tell them that they were not ill, but that theirs was a condition which developed into illness if they failed to follow certain rules. They could be healthy provided they adapted themselves to their peculiar metabolic circumstances. One result of telling them that they were not ill was to make them realise that they were meant to be useful members of society. They could be educated and could work and earn a living just about as well as anybody. True the patients with severe diabetes who needed much insulin were less well adapted than ordinary people for heavy work, because it was difficult to arrange a constant balance between the amount of work and the insulin supply. Dr. Svedberg had begun to use the clinical laboratory of the Board of Health of Stockholm as an out-patient clinic for diabetics, she said, in order that these patients should not have to spend hours in waiting at mixed clinics, with the loss of wages and perhaps employment. The clinic was opened in 1925, and in 1927 all the patients attending, with the exception of a few very old ones, were in work. Now, of course, few of the men were in work except boys under the age of 18, who received lower wages. Most of the women were employed, but as a group these patients were hard hit by unemployment because they were not first-class material. Diabetic children should be allowed to take part in sports and gymnastics.

Although they were not ill, diabetic patients must be reminded of certain weak points. They were liable to become infected early and often severely, and infections tended to make the diabetic condition worse. The beginning of diabetes could not generally be traced, but sometimes it clearly started in connexion with an acute infection, and was associated with pains of pancreatic origin. One of Dr. Svedberg's cases had entered hospital suspected of appendicitis and had left with diabetes. Sugar often appeared in the urine of a controlled case of diabetes following a cold, and the pathological process in the pancreas frequently seemed to progress with each cold. A diabetic patient with a cold should go to bed for a couple of days. Special care must be taken of the teeth and of all small wounds and abrasions, particularly of the feet.

If the urine of a patient contained sugar but no ketone bodies, Dr. Svedberg told him to return the next morning, fasting, and with a 24-hour sample of urine. She generally started mild cases with a fast-day, this often worked miracles in cases with itching eczema and a high blood-sugar. The patient spent the day in bed and drank as much water, tea, or coffee as he wished, and a little broth. This method was not suitable for severe cases whose treatment should not be ambulatory at the outset, or for children or young patients who would easily get acidosis. In cases of intermediate severity it was often possible for a visiting nurse to give the insulin injections at first. Evidence of a "liver-rhythm" had not withstood criticism, and the most that could be said was that the blood-sugar of mild diabetics and normal people fell during the night and the blood-sugar of severe diabetics rose, owing to the prolonged fast. It was therefore advisable for severe diabetics to take their morning insulin an hour or two before they took any food. Otherwise insulin could be given just before a meal.

In arranging the diet the aim was to keep the urine

sugar-free, but a secretion of 0·5–0·7 per cent. in the 24-hour specimen could scarcely be avoided in severe cases. A change of colour to pea-green in the Benedict test, but no further, could be ignored. A patient weighing 60 kg., and of corresponding height and doing light work, needed about 1800 calories a day. As a rule, it was wise to under-nourish diabetics a little because their weight tended to rise under treatment. Dr. Svedberg considered that the standard diet for a healthy man of 3700 calories a day, recently discussed in England, was unnecessarily high except in a few cases of extremely heavy work.

The upper limit of the intake of carbohydrates was governed by the patient's ability to use them; the lower limit by his needs, by the antiketogenic/ketogenic ratio of carbohydrates to fats, and by the stimulating effect of carbohydrates on the insulin mechanism. It was generally agreed that the dosage of insulin should be kept down as much as possible; large amounts of carbohydrate and insulin meant dangerous fluctuations in the blood-sugar. The carbohydrate in a diabetic diet usually did not exceed 100 g. The protein intake was generally about 1 g. per 1 kg. of body-weight, and the upper limit was set by the facts that fully half the amount of protein taken meant sugar in the body, that the amino-acids were, to some extent, ketogenic, and that carbohydrates were utilised better when the diet was low in protein. Restriction of carbohydrates and protein meant that about two-thirds of the diabetic diet consisted of fat. In 1909 the practice was to give diabetics a diet consisting largely of protein; later, just before the discovery of insulin, the diet was mostly fat. Nowadays we were giving a combination which approximated more closely to an ordinary diet, with a reasonable proportion of carbohydrate. Obese patients with mild diabetes did not readily develop ketosis, and could be given relatively more protein and less carbohydrate and fat. They could take about 1·5 g. of protein per 1 kg. of body-weight. Intelligent patients could be given a food table and told that nothing was *forbidden* provided they kept within the daily amount allowed of each of the three constituents. It was better for them to make liberal use of the vegetables with a low carbohydrate content and to use bread and potato sparingly. Less intelligent patients preferred to have a diet planned out for them. The aim was to keep the urine sugar-free in such a way that the patient enjoyed life and used as little insulin as possible. Joslin, in America, claimed that out of 2000 patients under his care only ten had 60 units daily.

A diabetic did well if he was intelligent, methodical, and firm; and if, lacking these qualities, he worshipped his physician. Most diabetics should be seen quarterly or oftener. Poverty was a hindrance to insulin treatment. In Denmark the insurance scheme found the cost of insulin for all who could not afford it. In Sweden the larger cities provided the cost when necessary, and in 20 out of 25 provinces the cost was met by the central administrative committee; in the other five the old-age pension was given in advance to cover the cost of insulin. Statistics on diabetes were so far unsatisfactory, but the diabetic mortality-rate had fallen since the discovery of insulin, and diabetic patients now died at a later age.

Dr. CICELY PEAKE recalled Joslin's dictum that diabetic children should be given a small dose of insulin at night and wondered whether he still held to it.

Dr. S. R. EASTWOOD had obtained better results with obese patients, she thought, by cutting down the fat in the diet and giving extra carbohydrate. The patient's sense of well-being seemed to be increased.

Dr. G. H. WAUCHOPE remarked on the sensible change which had occurred in the diet of diabetics during recent years, their diet approximating as nearly as possible to that of the normal person. She asked whether Dr. Svedberg found that her patients ever developed hypoglycæmic symptoms.

Dr. SVEDBERG replied that she had never used diets with a very high proportion of carbohydrates. She seldom saw a case of hypoglycæmia.

MEDICAL SOCIETY OF LONDON

AT a meeting of this society on March 12th, Sir JOHN THOMSON-WALKER, the president, in the chair, a discussion took place on the

Treatment of Cancer of the Uterus

Mr. VICTOR BONNEY said that up to the end of 1928 he had performed Wertheim's operation for carcinoma of the cervix 366 times, and achieved a five-year cure rate of 40 per cent. if including, and 41 per cent. if not including, cases lost sight of and dying of other disease. Since 10 per cent. of the recurrences took place after the fifth year, a ten-year freedom from recurrence was needed before a cure could be justly claimed. His operability rate was reckoned as 63 per cent. Up to the end of 1923 he had performed the operation 266 times, with a ten-year cure rate of 30 per cent. or 34 per cent., depending on whether the cases lost sight of and dying of other disease were or were not included.

He thought the results of surgery in cancer of the cervix were best expressed by saying that the operation succeeded in keeping cancer-free for five years two out of every five patients who were operated upon, and one out of every four patients who were seen, and in absolutely curing one out of every three patients operated upon, and one out of every five patients seen. By absolute cure he meant freedom from recurrence for ten years. His own results had now been constant for many years.

Mr. Bonney threw on the screen tables of figures which showed that the prognosis was much better where regional glands removed at the operation were free of growth. His five-year cure rate for such "gland-free" cases was over 50 per cent., as contrasted with about 20 per cent. for the gland-invaded cases. Over his last 200 operations Mr. Bonney's operative mortality-rate was 10 per cent.

He submitted that in any discussion on the relative values of operation and radiation, the proper comparison was, not between the results of treatment by operation and by radiology, but between the results obtained on the one hand by operating on a proportion of the cases, and irradiating the remainder; and, on the other hand, the results obtained by irradiating all cases. Of inoperable cases a certain number could be salvaged by radium. In assessing the total achievement this number had to be added to the number of operative cures. A surgeon who operated on a proportion of his patients, and irradiated the remainder, ought to obtain 30 to 31 five-year cures out of every 100 unselected patients presenting themselves. He himself had no figures which bore on that comparison, because, though for 20 years he had had most of his inoperable cases treated by radium, he had no record of the results which would be of value to the meeting. He pointed out in 1929 that of every 100 cases presented first hand to the radiologist, 40 already had malignant invasion of the regional glands, and these cases were beyond the scope of radium applied from the vagina. It was in the cases with involved glands that surgery more than made up on radium. A comparison between surgery and radium, founded on the surgeon's operability rate, and the number of so-called "operable" cases (stages I. and II.), treated by the radiologist, was useless, as there was no similarity between the respective groups. A better way, he contended, was to contrast the results obtained from similar percentages of the total number

of patients seen, though inaccuracies arose even in such a comparison. Probably if we knew enough cases of carcinoma of the cervix would be divided into four classes in which cure could be effected (1) only by operation; (2) only by radium; (3) either by operation or radium and (4) by neither. Whenever a way was discovered by which invaded glands and cellular tissue on the pelvic wall could be cured by irradiation, radiological treatment applied to all patients would give better results than operating on a proportion of them and irradiating the remainder, because the scope of the former method would be enlarged by 60 per cent.

Mr. MALCOLM DONALDSON said Mr. Bonney had referred more than once to the absolute cure-rate, by which the speaker assumed he meant the number of patients who were symptom-free at the end of say ten years, in comparison with the number of cases seen. He, the speaker, never used the word "cure" in this connexion; he went further than Mr. Bonney and said a patient could only be said to be cured when she was dead and the autopsy showed no growth. Mr. Bonney's operability figure was higher than that of most clinics. He contended that the mobility of the uterus and the extent of involvement gave the surgeon a good idea whether the case was operable or not. He had never heard a surgeon declare, on opening an abdomen, that the disease was less advanced than he had thought; it was always the other way about. The five-year survival-rate of cases deemed operable and treated by irradiation at various clinics were: Stockholm, 40·4 per cent.; Paris, 50·8 per cent.; Munich, 31·5 per cent.; Mayo Clinic, operable, 75 per cent., borderline, 61·5 per cent.; and Memorial Hospital, New York, early cases, 44·5 per cent. England did not at present furnish large masses of statistics of carcinoma of the cervix treated by radiotherapy, but a few figures showed considerable promise. Notably those from the Marie Curie Hospital, University College Hospital, and Mount Vernon Hospital. When Dr. Donaldson started to treat cases of carcinoma of the cervix at St. Bartholomew's Hospital by radiotherapy he used the interstitial method—i.e., planting needles round the cervix. Though this cleared up the local disease, it must be regarded as a failure, as of 113 cases classified as of stages I and II (operable) only 41 were alive in 1933, or 36·2 per cent. Since 1930 he had been using a modification of the Heyman technique at Mount Vernon, and had reason to hope for far better results. The five-year survival-rates from various continental centres suggested that the results from radiotherapy were somewhat better than those following Wertheim's hysterectomy, however skilful the surgeon.

Against radiotherapy it was urged by some that radium applied to the cervix and vagina had only a limited range, not destroying cancerous deposits in internal iliac glands. This seemed the only argument in favour of choosing a Wertheim. Yet 57 per cent. of Mr. Bonney's patients had no glandular metastases, and, on the other hand, 10·7 per cent. of cases died as a result of the Wertheim. Probably most of these might have been saved by radiotherapy. Dr. Donaldson considered that radiotherapy was already superior to Wertheim's hysterectomy, and the problem for the gynæcologist was how to further extend the area of efficient irradiation in the pelvis so as to deal with implicated glands. Many methods with this object had been devised. He envisaged the time when reliance would be placed on X ray therapy for these outlying secondary deposits. At present it was very difficult to eradicate carcinoma from gland tissues by radiotherapy. Until the action of radium and X rays on malignant disease was thoroughly understood, technique could only be based on empiricism. Carcinoma of the uterus included, he said, carcinoma of its body. He would agree with Mr. Bonney that the treatment for carcinoma of the body was surgical, followed by deep X ray therapy.

DISCUSSION

Mr. VIVIAN GREEN-ARMYTAGE said that the success attained by the flawless skill of Mr. Bonney was not likely to be approached by less experienced surgeons. The great test in deciding which treatment would be preferred was that which one chose for a near relative. A mortality-rate of 15 per cent. from the operation and a cure-rate of 40 per cent., with months of invalidism, would be gravely considered as against radium treatment, with no immediate mortality, no pain, and an end-result about the same as after a Wertheim. In Vienna the Wertheim was being practised less and less, radium and X rays having largely taken its place.

Mr. STANFORD CADE spoke hopefully of the future of radium treatment, especially in early cases. The glands which were the seat of secondary carcinomatous deposits were generally held to be very radioresistant. In his experience cervical glands with malignant deposits could be made to shrink under irradiation, and remained free from recurrence for periods up to 11 years. The Wertheim operation presented a serious risk to life, certainly in the hands of the average surgeon. A special effort ought to be made to prevent burns and other accidents from irradiation. By a combination of X-radiation and γ radiation it was possible to effectively deal with a larger range of patients than by any other means.

Dr. J. E. A. LYNHAM spoke of the personal factor in treatment which applied also to radium therapy. In his view there was no serious objection to surgery where the disease was essentially local. Cases just beyond the range of operation, with broad ligaments or pelvic wall involved, or palpable glands, were suitable for radium treatment. In still more advanced cases, with abdominal glands involved, neither surgery or radium would do great good, but the glands could be irradiated. The use of radium and X rays combined should improve figures.

Mr. ARNOLD WALKER had had some experience in the use of the Stockholm technique in conjunction with Mr. Comyns Berkeley; they had been able to secure results comparable with those following surgery, and certainly saved a number of apparently hopeless cases. The implication of glands presented an appalling problem. At the L.C.C. radium centre treatment by combined radium and X rays had been started. He thought the numbers of cases with gland involvement had been under-estimated.

Mr. BONNEY, in reply, said he had never known a recurrence more than ten years after operation. Of private cases he had operated upon 78 per cent. There was no proper comparison possible between the operability rate of the surgeon and that of the radiotherapeutist, since the latter classification was only a matter of opinion. He fully recognised that good radium treatment was better than bad surgery.

Mr. DONALDSON, in reply, insisted that the most hopeful factor in improving the figures for this disease was early diagnosis and treatment.

MIDLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

AT a meeting of this society at Birmingham on Feb. 19th, with Dr. C. E. PURSLOW, the president, in the chair, two cases of

Ulceration of the Vulva

were shown by Prof. BECKWITH WHITEHOUSE.

The first patient was an unmarried girl, aged 19, with a history of ulceration of both labia on the left side, treated 15 months previously by excision, with recent recurrence on the right side. Pathological examination had shown a "simple granuloma." The ulcer was shallow, acutely tender, with an irregular outline, and did not bleed on contact. The Wassermann reaction was negative (— —) and the Mantoux reaction positive (+ +). Her general condition was good, but she gave a history of recurrent attacks of ulceration in the mucous membrane of the mouth.

The second case was that of a married woman, who had had one child and two abortions, with a seven weeks' history of vulval ulceration, which was slowly extending. The appearances were similar to those in the first case, with an enlarged lymphatic gland in the left groin. Bioscopy showed "a chronic ulcer of septic type." There was also a history of recurrent ulceration in the mouth.

Mr. A. B. DANBY said that his diagnosis in both these cases was ulcer vulvæ acutum, a rare condition of which there were four clinical types, the infecting organism being a Gram-positive bacillus (*B. crassus*). Treatment was ineffective, for the ulceration usually recurred after excision and local applications accentuated it. Cases had been reported in America associated with ulceration in the mouth.—Mr. T. C. CLARE suggested that the ulcers might have been self-induced.—Mr. C. D. LOCHRANE said these cases were very rare; he did not think that the sections were typical of either tubercle, syphilis, or malignancy, nor were the clinical appearances those of esthiomène. They might be a rare form of lupus, but he thought that Mr. Danby's diagnosis was the correct one.—Prof. R. S. S. STATHAM described a case which he had had under observation for four years, in which he tried treatment with tuberculin, Stabilarsan, tartar emetic, and also application of radium, without success, but had finally been able to keep the ulceration in check by means of diathermy repeated at intervals of four months.—The PRESIDENT mentioned a similar case which he had regarded as tuberculous, on account of a history of tuberculous peritonitis.

Prof. WHITEHOUSE, replying, said he had had no experience of the condition described by Mr. Danby. There was no evidence of self-inflicted injury in either case. He had never seen a case of esthiomène which did not give a positive Wassermann reaction. He thought that the pathology of some ulcerative conditions of the vulva was not yet fully understood.

Endometrioma of Abdominal Wall

Mr. CLARE described a case of endometrioma following Cæsarean section 18 months previously. He had excised a small tumour from the scar, superficial to the rectus sheath, which showed typical microscopic appearance of an endometrioma.

Prof. WHITEHOUSE mentioned two cases of the condition. The first patient menstruated regularly through the scar of a long-standing ovariotomy incision; she had a pelvic endometriosis, too extensive for operative removal. He excised the ulcer, and all her other symptoms cleared up with deep X ray therapy. The second case, which had the typical microscopical appearance of endometrioma, occurred in a male after appendicectomy and drainage. He thought that the theory of peritoneal metaplasia accounted for the origin of some of these cases.—Prof. STATHAM said he had met with five of these cases, of which two were endometriomata of the umbilicus, occurring without any previous operation; one followed a Cæsarean section, one a myomectomy, and one a radical cure of a hernia involving the round ligament.—Mr. R. L. E. DOWNER described two similar cases, the first being an implantation growth in the scar of the abdominal hysterotomy for hydatidiform mole, and the second a tumour the size of a cherry in the vaginal wall at the fourth month of pregnancy. This disappeared as pregnancy advanced but reappeared six months later.—Mr. LOCHRANE said that these growths always shrank after all ovarian tissue was removed or destroyed. He had excised one five times with recurrence each time.

Dr. J. MITCHELL read a paper on the chemical composition of hæmatocolpos fluid, and Prof. WHITEHOUSE read a short communication on a case of sarcoma botryoides, with recurrence after 23 years.

REVIEWS AND NOTICES OF BOOKS

1. Histopathology of the Peripheral and Central Nervous Systems

By GEORGE B. HASSIN, M.D., Professor of Neurology, University of Illinois, College of Medicine; Attending Neurologist, Cook County Hospital, Chicago. London: Baillière, Tindall and Cox. 1933. Pp. 491. 30*s*.

2. A Text-book of Neuropathology

By ARTHUR WEIL, M.D., Associate Professor of Neuropathology, Northwestern University Medical School, Chicago, Illinois. London: Henry Kimpton. 1934. Pp. 335. 25*s*.

THE growth of interest in neurological pathology is resulting in a spate of text-books on this subject, notably from workers in the United States. These two are attractively produced, convenient in size, and bountifully illustrated, and on the whole pleasantly written. It is a pity that neuropathologists still cling to odd tags of German nomenclature when adequate English equivalents exist. This applies to both the books under review. There is no good reason why we should call the fat-granule cell, compound granular corpuscle or macrophage a Gitterzell when it occurs in the central nervous system, nor need we call a spongy or vacuolar area a Lueckenfeld. When we come across such terms as Gansebluemchenherde this devotion to Teutonism has become ridiculous.

1. Dr. Hassin's book, which is concerned with microscopic changes only, is divided into four parts. The first, devoted to diseases of the peripheral nerves, contains, rather curiously, a chapter on the histopathology of the muscles. The second part is concerned with the spinal cord, and the third with the brain, while the fourth consists of a useful appendix on staining methods appropriate to nerve tissues. There is an obvious disadvantage in describing separately the diseases of the brain and spinal cord. Many pathological conditions—for example, disseminated sclerosis—involve the central nervous system as a whole. To describe the lesions under both brain and cord would involve unnecessary repetition, and the solution adopted here is to deal

with the disease as a whole in the section devoted to the spinal cord, where the meagre reference to the brain would certainly lead an uninformed reader to suppose that disseminated sclerosis is principally an affection of the cord. The text as a whole gives an impression of having been assembled with lack of care both as to arrangement and style; syntax and spelling appear to have evaded revision. The matter is, in consequence, difficult to assimilate and the meaning is often obscure. Two further criticisms must be levelled against Dr. Hassin. In the first place he is apt to devote much space to rare conditions of the nervous system and to ignore the commonplaces. For example, he describes tuberculoma of the spinal cord, which is hardly ever seen, but makes no mention of the very common tuberculoma of the brain. Secondly, his dogmatic espousal of his own pet theories to the exclusion of more generally accepted ones merits remark. A notable example is his idea that internal hydrocephalus is the result of a failure of the choroid plexuses to absorb cerebro-spinal fluid which, according to him, is secreted diffusely by the brain tissue. Again, what will the student make out of his definition of syringomyelia (p. 132) as an abiotrophy of the glia tissue? Orthodox theories should surely receive some mention in a text-book. This one should be reserved for the use of those who are in search of recondite information and are armed against unsound teaching.

2. Dr. Weil's book is a clear and concise outline of the macroscopic and microscopic pathology of the central nervous system. It is arranged under the usual headings of inflammations, degenerations, and so forth, but is somewhat unusual in that a good deal of attention is devoted to the chemistry of the brain and its post-mortem changes. This is of particular value because the lipoidal constitution of the central nervous system modifies very considerably the character of its histological reactions. A useful appendix on relevant statistical tables, post-mortem technique, and staining methods is included. Certain subjects, such as pachymeningitis, hydrocephalus, and cerebral aneurysm, are neglected, and the section on pituitary tumours omits any reference to the basophilic type of adenoma. In spite of these omissions the book will undoubtedly be serviceable both to students and laboratory workers.

Surgical Pathology of the Mammary Gland

By ARTHUR E. HERTZLER, M.D., Surgeon to the Agnes Hertzler Memorial Hospital, Halstead, Kansas Professor of Surgery, University of Kansas; and IRENE A. KOENEKE, M.D., M.Sc., Gynecologist, Halstead Hospital. London and Philadelphia: J. B. Lippincott Company. 1934. Pp. 283. 21s.

THIS volume forms the fifth in the series of monographs on surgical pathology published by Prof. Hertzler since 1931. The subject is approached from the point of view of the practical surgeon rather than of the pathologist, and though the language is sometimes loose, the conclusions, from a wide clinical experience, are expressed with much shrewd common sense, and with a candour and unconventionality unusual in medical literature. The early chapters on normal mammary growth are helpful in the stress laid on the range of variation in both the epithelium and stroma encountered in breasts which give no evidence of abnormality. A protest is made against the diagnosis "chronic interstitial mastitis" for appearances which show no definite pathological change; there would seem, however, no justification for the authors' use of the term "interstitial metaplasia" for the loose intralobular connective tissue, which is a normal and not a metaplasic appearance.

The consideration of malignant breast tumours as "preclinical," clinical (operable), and inoperable is helpful, and the problems raised by each group are discussed in the light of much operative experience. The division of the clinical group into diffuse and circumscribed types is also welcome in suggesting a broad basis of classification which combines clinical and pathological findings, but the description of the pathogenesis and histology of the circumscribed growths is unconvincing. Undue emphasis is laid on the cytology, as distinct from the anatomy of the tumour. Other chapters deal with cysts, rare tumour types, metastasis, and prognosis. The bibliography to each chapter is intended as a guide to the extensive references found in the larger text-books. The book is well produced, and the 240 illustrations, from operative material, photomicrographs, and radiograms, are well worth detailed study.

British Journal of Children's Diseases

To the January–March issue Dr. Hugh T. Ashby contributes a paper on Empyema in Children from the Physician's Point of View. He states that it is rare to find an empyema in childhood following any other disease but pneumonia. Absolute or stony dullness on percussion is the most valuable diagnostic sign, and all other physical signs are often misleading. Synpneumonic empyema is best treated by aspiration at the earliest possible moment, and open rib-resection can be delayed for a week or ten days, whereas metapneumonic empyema should be operated on as soon as possible. Empyema in infancy is best treated by aspiration alone. In pneumococcal empyema in children over 3 years of age, injection of Optochin after removal of the pus, repeated if necessary three or four times, is often successful.—In a paper entitled Papular Urticaria and the Dynamics of Skin Sensation, Dr. D. W. Winnicott maintains that papular urticaria is an expression of excitement of the skin brought about either by external causes such as unsuitable clothing or infestation or by internal causes. In troublesome cases the internal causes become complicated in various ways and degrees and may indicate difficulties in regard to anal or genital excitement and the accompanying unconscious phantasies.—In a paper on the Early Diagnosis of Congenital Dislocation of the Hip, Miss M. Forrester-Brown who discusses the nature, diagnosis, and treatment at various ages of this condition maintains that congenital dislocation of the hip is a condition fairly widespread, not preventable, easily overlooked at the age at which its treatment is simple and efficient, and a source of great discomfort and deformity with increasing age. It is therefore desirable that all who treat large numbers of infants should keep the possibility of its occurrence constantly in mind and should submit to X ray examination every infant who exhibits the least abnormality of the hip region or lower limb.—In a paper on Cystic Dilatation of the Common Bile-duct, Dr. F. Parkes Weber records a fatal case in a girl, aged 12 years, with the post-mortem findings and histological examination, and remarks on the nature of the hepatic cirrhosis present.—Dr. W. J. Rutherfurd contributes a paper on the Post-mature Infant, a striking example of which condition is to be found in the mediaeval romance entitled the Lyfe of Robert the Devyll by Wynkyn de Worde.—The abstracts from current literature are devoted to nervous and mental diseases.

Messrs. Baillière, Tindall and Cox are the agents in this country for the book entitled a "Laboratory Manual of Physiological Chemistry," by Prof. D. Wright Wilson, which was reviewed in our issue of March 3rd.

THE LANCET

LONDON: SATURDAY, MARCH 17, 1934

ANGINA PECTORIS

IT now seems probable that a relative deficiency in the flow of blood to the heart—a deficiency, that is, in relation to the work the heart is called upon to do—is responsible for the pain in the chest which HEBERDEN so well described. It has taken a long time, from the publication of HEBERDEN'S description, to discover that *complete* removal of the blood-supply of a portion of the heart, as in coronary thrombosis, produces a more or less distinct clinical picture. If syphilitic cases are excluded, the pathological basis of the pain of coronary thrombosis and of "angina of effort" is essentially the same, but their separation has nevertheless served two good purposes: it has defined a clinical entity (coronary thrombosis) and it has increased our understanding of effort angina in all its aspects. Within the last decade it has become obvious that the whole problem of effort angina must be reviewed, and the work which has already been done has given us a clearer idea of the characteristics of the pain, the circulatory changes which accompany it, and its response to therapeutic measures. The many remedies which have been employed are now being put to the test of precise and controlled observation.

One of the features of effort angina which is not yet generally appreciated is that it is not usually a severe pain; very often it amounts to no more than discomfort, and wider recognition of this fact would lead to its more frequent diagnosis. In a very thorough study of 11 patients with angina only on effort, E. J. WAYNE and L. B. LAPLACE [1] found that if the effort continued after its onset the pain became worse and spread round the chest. They observed that an increase in systolic blood pressure might accompany the pain, but there was no constant relation between them; on the other hand, a relation between an increase in the pulse-rate and pain could nearly always be demonstrated. The significance of increase in pulse-rate is supported, they hold, by their observations on the effect of atropine intravenously, and of pressure on the carotid sinus. Atropine, which increases the pulse-rate while lowering the blood pressure, diminished the patients' ability to take effort before pain arose and increased its duration; whereas pressure on the carotid sinus slowed the heart-rate and always lessened the duration of anginal pain. Similarly, inhalation of amyl nitrite reduced the pain's duration, but its effect was unrelated to the fall in blood pressure, and the relief is regarded as due to dilatation of coronary vessels. It is noteworthy, however, that some patients allowed the pain to pass off naturally, rather than endure the unpleasant effects of the drug. The effect of nitroglycerin given for the relief of an attack could not be properly judged, since the delay in its action usually exceeded the natural duration of the pain; but given as a prophylactic before exercise it caused a considerable increase in the effort tolerance of a majority of the patients. W. EVANS and C. HOYLE [2] similarly find nitroglycerin very useful in preventing attacks. They have previously reported observations [3] on a large series of drugs used for the continuous treatment of angina, and their conclusion that none of these could be recommended cleared the ground for further work. In their later paper dealing chiefly with the quicker acting nitrites they offer evidence of the value of nitroglycerin; and, apart from its superiority both in preventing and relieving pain, they find it scores also in freedom from disagreeable effects, convenience in use, keeping properties, and cheapness. They lay stress, however, on the importance of its absorption from the mouth and were able to demonstrate that when introduced into the stomach it is almost inert. In our present issue Dr. EVANS and Dr. HOYLE carry their investigation a stage further with a study of the value of rest in bed for cases of angina. After taking precautions to control their results as far as possible they found that complete rest for over a month was of benefit to a majority of their patients, the best results being achieved in those with only a short history of the complaint and in those with a high blood pressure, though the clinical improvement was not associated with a reduction in the pressure. Results of the same order were obtained by WAYNE and LAPLACE.

Two other papers of practical interest may here be mentioned. PAUL D. WHITE and TRIMBLE SHARBER [4] have examined the relationship of angina to the use of, or abstinence from, alcohol and tobacco, and find that neither seems to play an important part in the genesis of the condition. "In occasional cases the use of tobacco apparently aggravates or precipitates attacks . . . and in occasional cases alcohol helps to prevent or to relieve" them. E. P. EPPINGER and S. A. LEVINE [5] have inquired into the relation between angina and high blood pressure, and to this end have analysed the records of a large series of anginal patients who had died—the terminal event being usually coronary thrombosis. They find that while hypertension in men was not by any means the rule, it was present almost without exception in the women. They believe, therefore, that angina should be diagnosed only with caution in a woman whose blood pressure is not raised, especially if she is less than 50 years of age. EPPINGER and LEVINE'S figures suggest that the average expectation of life is four and a half years after the onset of the disease, and this agrees with the less gloomy attitude towards it which we now believe to be justified. The result of gaining more information about the disease in its two principal forms has been on the whole an increase of optimism about it. The nature of the condition

[1] Clin. Science, 1933, i., 103.

[2] Quart. Jour. Med., January, 1934, p. 105.
[3] Ibid., 1933, ii., 311; see THE LANCET, 1933, ii., 603.
[4] Jour. Amer. Med. Assoc., March 3rd, 1934, p. 655.
[5] Arch. Internal Med., January, 1934, p. 120.

precludes what may be called a good prognosis, since it always carries a liability to sudden death. But the solution of the remaining related problems—and there are many—can only brighten the outlook for the patient.

MEDICAL CERTIFICATION BY UNREGISTERED PRACTITIONERS

THE Manchester city council discussed last week a point of some public importance—namely, the acceptability of the signature of a "physio-medical practitioner" to documents which require to be signed by a registered medical practitioner. As is well known, Section 37 of the Medical Act declares that, where a statute requires a certificate to be signed by a medical practitioner, the document will be invalid unless signed by a registered practitioner. It may be that in the Manchester case the document was not expressly a certificate; the spirit rather than the letter of Section 37 may have been in question. It is certainly expedient that there should be no doubt as to the official medical documents which an unregistered and untrained practitioner may or may not sign.

The circumstances under discussion were as follows.[1] On Dec. 22nd the medical officer's department received a notice that a schoolboy named MALCOLM TITT was suffering from scarlet fever. The document was signed by Mr. C. C. ABBOTT, a "physio-medical practitioner." The action to be taken under the Infectious Disease (Notification) Act of 1889 takes two forms: (*a*) the head of the family—failing him, the nearest relatives of the patient—failing them, everyone in charge of or in attendance on the patient—must send "notice" to the medical officer of health; and (*b*) every medical practitioner attending the patient must send the medical officer a "certificate." In practice the doctor's "certificate" is often accepted in lieu of the head of the family's "notice." Mr. ABBOTT, not being a registered practitioner, could send the "notice" as a person in attendance on the patient; but he could not send the "certificate." On Feb. 1st the medical officer's department received a letter from Mr. ABBOTT stating that the infectious period had now expired and that the room occupied was ready for fumigation. Alderman TITT, the father of the schoolboy, was naturally informed that there could be no fumigation until a registered medical practitioner certified that the patient was free from infection. To remove possible difficulties, the deputy medical officer offered to visit the house and see the boy, thus avoiding delay. The Alderman, standing on principle and preferring, as it appears, the services of a physio-medical practitioner, challenged the authority of the medical officer's department to require a certificate. In view of Section 37 of the Medical Act the Alderman could hardly assert that, if a certificate was required, Mr. ABBOTT could give one that was valid. The department replied on Feb. 6th restating their requirement and their offer to send the deputy medical officer. The refusal to accept Mr. ABBOTT's declaration that the house was fit for fumigation found its way on to the minutes of the health committee, and a discussion took place upon Alderman TITT's comments on the minutes in the council chamber. An unexpected difficulty arose when a councillor asked whether the Alderman was not debarred from taking part in the discussion inasmuch as he had an interest, pecuniary or otherwise, in the matter. The Town Clerk, after consideration, advised the Lord Mayor that technically Alderman TITT was financially interested inasmuch as the cost of fumigation would fall upon the owner or occupier, apart from any question whether a medical practitioner or the deputy medical officer might or might not make a charge for visiting the house to make the necessary examination before the clearance form was signed. In the end the council rejected a motion to refer the minutes back for reconsideration on the point whether the medical officer was justified in requiring a registered medical practitioner's certificate. Some of the councillors who supported the motion had argued that, if the medical officer accepted Mr. ABBOTT's statement that the patient had scarlet fever, he must also accept Mr. ABBOTT's statement that the patient had ceased to have scarlet fever. This ingenious method of driving a coach and four through Section 37 of the Medical Act evidently failed to convince the majority.

Section 37, after all, was not passed to fortify the professional monopoly of registered doctors but to protect the public. A man may (as the coroner observed at a recent inquest where physio-medical practitioners' treatment was under investigation) call in a blacksmith or a carpenter to give him medical treatment if he is so minded. But the fact that the blacksmith was sure the patient was alive last week would not necessarily inspire complete confidence in the blacksmith's declaration that the patient was now dead. No properly administered insurance company, provident society, or trade-union would pay medical benefit without the certificate of a registered medical practitioner. It is no use to tell them that somebody else's certificate is just as good.

[1] Manchester Guardian, March 8th, p. 11.

THE TREATMENT OF OSTEOMYELITIS

THE reception given to Dr. WINNETT ORR'S paper[1] at the Dublin meeting of the British Medical Association last July showed that his method of treating osteomyelitis, revolutionary as it once seemed, has now an excellent reputation. As then described by Dr. WINNETT ORR its essentials are: operative exposure of every part of the infected bone, so as to ensure drainage to the surface; cleansing of the wound, with removal of dead tissues, and the application of iodine and alcohol to its surface; packing with aseptic vaseline; and finally complete immobilisation in plaster-of-Paris during the whole process of healing. At the same meeting Prof. M. G. O'MALLEY testified to the success of the method in a series of cases of acute osteomyelitis, and he has now published[2] the details of these cases,

[1] Brit. Med. Jour., 1933, ii., 365; see also THE LANCET, 1933, ii., 357. [2] Brit. Jour. Surg., January, 1934, p. 530.

together with the conclusions he draws from them. Of 31 patients admitted to the Central Hospital, Galway, with acute osteomyelitis, 17 were treated by the Orr method, and 16 by the more usual routine of frequent dressings. There were 4 deaths in the whole series of 31, and only one of them was among the 17 cases treated according to WINNETT ORR'S technique, but as two of the other three patients were moribund on admission O'MALLEY does not argue from this that the immediate mortality is influenced by the change of method; it is hardly to be supposed, indeed, that it would be so influenced, for immediate complete exposure was practised in both series. What he does bring out in his paper, however, is the smoothness of the convalescence and the absence of pain and the ease in dressing experienced in the cases treated in the new way. Every one of these patients was seriously ill and required extensive exposure of the medulla for extensive disease; yet, even in the worst of them, the temperature was normal on the third to the sixth day, and in almost every case it remained normal, while the general condition gave rise to no anxiety. The average number of dressings required was three, and the first dressing was as a rule untouched for eight weeks. It was this abandonment, under the new régime, of successive and painful dressings that led Prof. D. P. D. WILKIE at Dublin to speak of the transformation of the children's wards of our hospitals which WINNETT ORR had wrought. The prevention of deformities and the economy affected by the saving in dressings are other substantial advantages which O'MALLEY cites.

From the success gained in the application of this method of treating bone infections—not only in osteomyelitis, but also in cases of infected compound fracture—it seems proven that if surgical interference is limited to the prevention of "pocketing," if protection is afforded from outside infection, and if complete rest is assured by prolonged immobilisation of the limb, the tissues are well able to deal with their attackers without the aid of antiseptics. Frequent dressing of such wounds is coming to be regarded as a positive source of danger.

ANNOTATIONS

G.M.C.: ELECTION OF A DIRECT REPRESENTATIVE

THE election will shortly take place of a direct representative for England to the General Medical Council, to fill the place of Dr. Christine Murrell who died before taking her seat. Official notice of the vacancy will be issued on March 23rd, April 10th being the last day for nominations to reach the registrar of the Council. Voting papers will then be issued on April 17th, to be returned by the 24th, and the result will be declared on April 27th.

PROGRESS UNDER DIFFICULTIES IN INDIA

THE concluding section of the latest report of the public health commissioner with the Government of India,[1] entitled Retrospect, Reflections, Conclusions, contains an informing summary of the labours of the retiring holder of that responsible post from 1924 to 1933, Major-General J. D. Graham, I.M.S. An idea of the scope of his work is afforded by a table of 64 conferences he attended during that period, including frequent meetings of the Office International d'Hygiène Publique in Paris, the Health Committee of the League of Nations in Geneva, and the Eastern Bureau of the League, at all of which he was the first regular representative of the Government of India. The most important outcome of those meetings was the Convention of 1926, revising the International Sanitary Convention of 1914, which was signed on behalf of the Government of India but, much to the disappointment of General Graham, had still not been ratified by them at the end of 1933, apparently owing to retrenchment preventing the urgently required improvement in the equipment of the major Indian ports.

The Research Department has also made progress in spite of the most rigid economies, including the holding in abeyance for some years of eleven of the permanent posts, and the suspension of the entire annual grant of five lakhs necessitating the expenditure of capital intended for financing the new central research institute recommended by the Starling and Fletcher committees. Plans for that much-needed institution have now been abandoned and the old Kasauli Central Laboratory buildings have been put in a good state of repair. Fortunately, owing to the generosity of the Rockefeller Foundation, a fine public health institute has been built and opened opposite the Calcutta School of Tropical Medicine, the hygiene section of which it has taken over to allow of some relief to the overcrowding of the school. The governing body of the Research Fund Association, which meets yearly to deal with the programme of research, has been changed from a largely official one by the addition of about an equal number of unofficial members, including politicians.

Other important events include congresses on malaria and arrangements for the manufacture in India of a cheaper but efficient preparation of the total alkaloids of quinine on the lines of the old cinchona febrifuge, but now called Totaquina; work on the Leprosy Commission of the League of Nations, the Leonard Wood Leprosy Memorial Committee Conference, and the Indian branch of the British Empire Leprosy Relief Association. Evidence was also given before the Labour Commission and assistance given to the Drugs Committee, Railway Medical Conference, and other inquiries of public interest. These activities well illustrate the multitudinous duties of the public health commissioner and increase the astonishment at the recent attempt in the name of economy to abolish the post altogether. It is to be hoped the remarkable achievements of General Graham under very difficult conditions of retrenchment and political change will give this proposal its death-blow.

ALUM-TOXOID

EIGHTEEN months ago, in commenting on a paper by Dr. J. C. Saunders, we gave it as our opinion that the time was not yet ripe when alum-toxoid should be recommended for routine use in anti-diphtheria immunisation. Since then several other communications on the subject have been made, and it is of interest to consider how far they call for a modification

[1] Annual Report of the Public Health Commissioner with the Government of India for 1931. With appendices. Delhi: Manager of Publications. Vol. I. 1933. Pp. 516. Rs.4–12, or 8s.

of the opinion then expressed. Saunders [1] added to his original information a ful account of his experience of undesirable reactions, and it was clear that the reactions he encountered were more numerous and more severe than would have followed the use of toxoid-antitoxin mixtures, toxoid-antitoxin floccules, and probably toxoid by itself. Excellent immunising results with alum-toxoid have been reported by W. H. Park [2] and more recently by J. N. Baker and D. G. Gill [3] in an interesting account of the immunisation of some 16,000 children with alum-toxoid in Alabama. With regard to the reactions accompanying immunisation, however, the position can still hardly be considered satisfactory. Park found he could safely inject the material into children under 3, but in others these reactions though "not in the least harmful . . . . are annoying." Baker and Gill found that local and general reactions were not any more severe with alum-toxoid than when ordinary toxoid was used. In this country such a statement might be taken as the faint praise that damns; for the wider use of toxoid has been delayed here, just because of its tendency to produce more severe reactions than our public health authorities are accustomed to or would look upon with complacence. If toxoid immunisation is becoming more popular in England it is mainly because of the assurance given by the Moloney test, which detects those liable to severe reactions; and it is not certain that the Moloney test will have a similar value in alum-toxoid immunisation. The reactions which occur after alum-toxoid are probably due, at least in part, to the action of the alum. It is unfortunate that the reaction-producing property of a given batch of alum-toxoid can at present only be estimated from extensive human trial, and the records, published and unpublished, which are so far available suggest that any alum preparation of high antigenic value would sooner or later be responsible for a certain proportion of undesirable reactions. In the Alabama series it is mentioned that some children showed local and even severe general reactions, and that eight developed abscesses which required incision. With the prophylactics issued for routine use by English laboratories, reactions of this degree of severity are unheard of. The production of sterile abscesses, even if occasional, must be considered a very serious drawback to any material used for human injection. It might be disastrous—for instance, if the occurrence of such an abscess coincided with the accidental introduction of a pathogenic anaerobe or even a septic bacterium.

It would be, of course, a great advantage in anti-diphtheria work if this powerful modern antigen could be used for mass immunisations. The number of injections could be reduced to two or perhaps even to one, and there would be very few failures in actual immunisation. The average English parent or health officer does not, however, consider diphtheria such a grave risk as to tolerate serious discomfort or danger in achieving protection against it. The prophylactics in common use in this country have the incalculable advantage of having been tried out on a large scale, over a number of years, and with a remarkable absence of untoward accidents. As antigens they are quite efficient enough for practical purposes, and it would be inadvisable to replace them with alum-toxoid until the issuing laboratories can guarantee that reactions of the kind we have referred to have been eliminated. It may be taken as significant that in spite of the extended trials in Alabama and elsewhere the laboratory of origin of alum-toxoid still refuses to release it for general use.

[1] THE LANCET, 1933, ii., 791.
[2] Amer. Jour. Pub. Health, 1933, xviii., 600.
[3] Ibid., January, 1934, p. 22.

MEDICINE IN THE NEW L.C.C.

THREE years ago seven members of the medical profession were elected to the London County Council. At last week's election ten medical men and women stood, and all were elected, four of them for the first time.

Name.	Division.	Party.
Dr. C. W. Brook*	Southwark North	Lab.
Dr. S. Monckton Copeman, F.R.S.	Hampstead	M.R.
Dr. J. A. Gillison	Bermondsey, Rotherhithe	Lab.
Mr. Somerville Hastings, M.S., F.R.C.S.*	Stepney, Mile End	Lab.
Dr. Bernard Homa	Hackney Central	Lab.
Dr. S. W. Jeger*	Shoreditch	Lab.
Miss F. Barrie Lambert, C.B.E., M.B., J.P.*	Westminster, St. George's	M.R.
Dr. G. McClements	Woolwich West	Lab.
Miss Esther Rickards, M.S. F.R.C.S.*	Greenwich	Lab.
Dr. Henry Robinson, D.L., J.P.*	Kensington North	M.R.

* Re-elected. M.R.=Municipal Reformer.

Miss Rickards was an alderman in the last Council. Dr. Barrie Lambert has been for seven years past chairman of the central public health committee. All the other previous members of the Council served on one or more of the committees; Dr. Robinson was vice-chairman of the hospital management sub-committee, and of the parks' committee. Dr. Adeline Roberts, who was chairman of the mental hospitals committee in 1929–32, and has been a member of the Council for 12 years, did not stand for re-election; nor did Dr. Stella Churchill, who represented South-east Southwark in 1931, but resigned in the following year owing to ill-health.

In the new Council Mr. Somerville Hastings has been nominated chairman of the newly constituted hospitals and medical services committee, Miss Rickards chairman of the establishment committee, and Dr. Brook chairman of the welfare of the blind committee.

TRANSURETHRAL SURGERY

FEW have a better right than Dr. J. R. Caulk to review the present position of transurethral prostatectomy, for he is one of the pioneers who have helped to bring prostatic resection to its present state of perfection. His name has long been associated with the cautery punch he invented, and in his latest paper [1] he expresses his opinion that the removal of prostatic tissue by the cautery method is safer than its removal by means of high-frequency currents. He bases this opinion on the observation that fewer complications have arisen after punch operations than after resections. Most authors agree that when death occurs after resection operations it is usually the result of sepsis, and severe sepsis seems to be commoner when high-frequency currents are used than with the cautery punch. Caulk explained this by suggesting that the high-frequency currents generate heat in the tissues at points distantly removed from the actual site of burning, and that this heat is often sufficient to bring about subsequent cell death. The heat generated by the cautery current, on the other hand, never penetrates. Although the danger of causing necrosis at a distance from the point of resection may be combated by restricting the duration of repeated applications of the high-frequency current

[1] Surg., Gyn., and Obst., February, 1934, p. 341.

and by substituting several sessions for a prolonged operation, it cannot be wholly eliminated. Hence Caulk believes that the use of the cautery punch or of a cold punch following coagulation is safer than resection with the McCarthy instrument. His article concludes with a description of a new model of cautery punch which he now employs.

A CORONER ON "EXPLICIT INSTRUCTIONS"

AN inquest at Southwark last week illustrated once more the danger of taking an anæsthetic while undigested food remains in the stomach. The danger is well known to all practitioners and, indeed, to most educated persons, but it is one which is apt to be ignored by the uninformed. For this reason hospitals provide special instruction to parents who are bringing their small children for operations in the out-patient department. On the occasion to which we refer, the child was given, before his attendance for operation, a meal of porridge and milk, and in recording the verdict the coroner, Dr. Douglas Cowburn, said it was perfectly clear that death was caused by displacement of the heart as a result of the meal. According to the newspaper report he further remarked that the mother could not possibly be blamed, since "the directions on the card were not sufficiently specific." This was perhaps a little hard on the hospital concerned. The instruction on the card was "no food to be given"—presumably on the morning when the child is taken to hospital. This has the merit of being succinct and comprehensive and is perhaps more likely to arrest the parent's attention and to be obeyed than more elaborate directions of the kind suggested by the coroner, which would go into details about solid and liquid nourishment. The fact remains that in this case it failed to impress.

THE MEDICAL CURRICULUM AT CAMBRIDGE

THE Syndicate on the medical courses and examinations of the University has published a second report, giving the new regulations which will have effect from Oct. 1st, 1934.[1] The alterations both in procedure and arrangement of subjects make for simplicity. The University requires the M.B. to keep nine University terms, while five calendar years of medical study are, of course, required for the M.D. degree. There are two examinations, the First and the Final, for the M.B. The First examination will be held three times a year, and may be taken by any matriculated student or student who has completed the formalities for registration and admission to the University. The Final is held twice yearly and the candidate must have completed the First examination and be able to produce the necessary certificates of training in the various subjects and attendance at the stated courses. Schedules defining the range of the examinations are to be drawn up from time to time, and clear directions are given as to the exemptions which can be obtained from the different parts of the examination. The student is allowed to take the four First M.B. subjects, general and inorganic chemistry, physics, elementary biology, and organic chemistry, either together or separately, and it is shown how exemption can be obtained from the different parts. Candidates for the Final examinations must have completed the First examination and must furnish evidence of proficiency in anatomy, physiology, and pharmacology, either by the satisfaction of qualifying examinations or by the evidence furnished through a position obtained in the Natural Science Tripos. "No student may take both parts of the Final examination for the M.B. until the eighteenth term after his first term of residence; nor either part until the sixteenth term after his first term of residence; nor, save in exceptional circumstances, both parts together until three years have elapsed after his passing in both anatomy and physiology; nor one part until two and a half years have so elapsed." The Final examination is divided into two parts which can be taken together or separately. The first part consists of surgery and special pathology and midwifery and diseases of women. The second part consists of the practice of physic, including diseases of children, mental diseases, and medical jurisprudence; pathology, including hygiene and preventive medicine; and pharmacology, including therapeutics and toxicology. Clear statements are made concerning the proofs required as to attendances on courses of general medical and surgical instruction and gynæcological practice and on anæsthetics.

The disappearance of the old regulations for a Second M.B. makes for simplicity, while we can observe the proper intention to fuse the professional course with the honours course of the Natural Sciences Tripos.

CHICK MEMBRANE VACCINE LYMPH

THE work of British epidemiologists and pathologists often gets useful prominence abroad through the communications made to the Office International d'Hygiène Publique at its half-yearly meetings in Paris, and their subsequent publication in its *Bulletin Mensuel*. The first number of these monthly bulletins for 1934[1] is a topical illustration; it contains, on yellow fever, a review by Dr. G. M. Findlay of recent experimental work on immunisation; on tropical typhus and allied diseases, a comprehensive study by Dr. William Fletcher, submitted by the delegate for the British Colonies; and, on small-pox, a summary of the incidence in time, and the geographical distribution, of some 80,000 cases of small-pox (variola minor) notified in England and Wales during the past 12 years. The last of these is set out by Sir George Buchanan, delegate for the United Kingdom, in a convenient form which we do not remember to have seen elsewhere, and is accompanied by an exposition which should make better known in foreign countries the efficiency of the measures, including vaccination, which are taken by our public health authorities when dealing with small-pox of any type.

The contributions which are made in this number have particular interest on the subject of vaccinia. Lieut.-Col. W. H. D. Stevenson and Dr. G. G. Butler, in our issue of July 29th, 1933, described the work which by then had been done at the Government Lymph Establishment to produce a completely sterile lymph by growth of dermal strains of vaccinia introduced on to the chorio-allantoic membranes of fertile hen's eggs at about the tenth day of incubation of the embryo. At the time[2] we pointed out the substantial advantages which such a lymph might possess, since it seemed that from the commencement it would contain the vaccinia virus without the presence of the non-pathogenic bacteria which usually accompany lymph taken from the skin of the calf, or of those potentially pathogenic organisms which have now to be excluded by special

[1] Vide THE LANCET, 1933, ii., 95.

[1] January, 1934, vol. xxvi., No. 1.
[2] THE LANCET, 1933, ii., 251.

methods. In the *Bulletin Mensuel* Stevenson and Butler have re-stated the encouraging results previously reported, adding some admirable photographs of the growth of vaccine on the embryo made for them at the National Institute for Medical Research by Mr. J. E. Barnard, F.R.S. The importance of using an initial dermal strain of vaccine which after its inoculation grows outwards on the chorio-allantoic membrane towards the shell of the egg and maintains the dermal character of its growth, lies in its appropriateness to human vaccination, in which undesirable reactions are sometimes found to attend the use of testicular or other strains of non-dermal origin. After comprehensive animal experimentation, the chick membrane virus has now been put to the test of human vaccination by E. W. Goodpasture and G. J. Buddingh, of the Vanderbilt University Medical School, who were among the earliest to realise the utility of the growing chick embryo to pathological research. These experimenters have recorded [3] a first trial by vaccinating seven suitable persons with chick embryo lymph of a sixth passage, side by side with a control series of seven other persons vaccinated with calf lymph. The results were satisfactory; as were those obtained when using a chick embryo lymph of a seventy-fifth passage, in which stability of the vaccinia virus was assured. The appearances of the vaccinia in the vaccinated subjects were typical, and the reaction, if anything, milder than that produced by calf lymph. The way in fact has been cleared for the trial of chick membrane vaccine lymph on a wider scale, in the hope of securing the substantial advantages which the pioneer investigations promise. One of these should be economy, since we note that Stevenson and Butler reckon that 38 eggs, when opened on the fourth day of their incubation after their inoculation with vaccina, yielded sufficient lymph to vaccinate over 7000 persons. It can only be conjectured whether the complete sterility of the vaccine, if assured in this way, could by itself affect the combination of circumstances which results in those rare cases of post-vaccinal encephalitis which have been so intensively studied in recent years. The *Bulletin Mensuel* shows how closely the occurrence of any such cases is now being watched for in many European countries. They continue to be found, but happily with increasing rarity. Several uncertainties about the causes of post-vaccinal encephalitis would, however, be removed if the question whether this complication can occur after vaccination with chick dermal lymph could be answered affirmatively or negatively.

EXPERIMENTS WITH EVIPAN

THE case in favour of using evipan is strengthened by a recent investigation into its pharmacology. W. P. Kennedy and B. Narayana [4] show that the depressant action of evipan sodium on the frog's heart is rapidly removed by washing and is antagonised by adrenaline, and that the drug has no significant effect on the blood-sugar of rabbits. Detoxication in mammals, they find, is very rapid. Respiration is slowed and the temperature is reduced in animals which have been rendered anæsthetic, and when death is brought about by excessive dosage it is always due to primary respiratory failure, but artificial restoration revived some of the animals apparently about to die. It cannot yet be determined, of course, how wide will be the permanent place occupied by evipan among commonly employed anæsthetics. That it can be of great value for longer as well as for short operations, at any rate in the hands of those with special experience in its use, is clearly shown by the paper by Mr. Abel and Dr. Jarman which we published last week. There are always, however, a certain number of anæsthetists who believe in avoiding anæsthetics that have to be injected intravenously.

[3] Science, Nov. 24th, 1933.
[4] Quart. Jour. Exper. Physiol., 1934, xxiv., 69.

THE INSTITUTE OF MEDICAL PSYCHOLOGY

NEARLY 14 years ago Dr. H. Crichton Miller founded the Tavistock Clinic for Functional Nerve Cases, now known as the Institute of Medical Psychology, and for the whole of that time he has been honorary director of the institute. Owing to pressure of other work he has now resigned that position, remaining on the staff as hon. senior physician, and as a member of the council. Dr. J. R. Rees succeeds him as medical director with two assistant directors, Dr. Henry V. Dicks and Dr. Mary C. Luff. We are informed that after a long period during which the waiting-list was closed it has now been found possible to reopen it for patients (from outside the L.C.C. area) who can attend at any hour of the day. The list for evening treatment of adults is still full and other names cannot be entered on it at present.

ANTITYPHOID INOCULATION

FURTHER researches carried out in the vaccine department of the Royal Army Medical College are published in the March number of the *Journal* of the R.A.M.C. Continuing their previous work,[1] Colonel H. Marrian Perry, Major H. T. Findlay, and Major H. J. Bensted have attempted to correlate the immunity induced in the human subject by a vaccine of the typhoid bacillus in its various phases with that produced in mice by the same means. The conclusion is reached that there is a definite correlation between the development of immune substances in the blood of the human subject and the result of mouse protection tests following the inoculation of typhoid vaccines. The results so far obtained are now being applied in the preparation of the army typhoid-paratyphoid vaccine. The view is expressed that it is not the strain employed that is of importance, so much as the fact that the emulsion from which the vaccine is prepared should consist of pure smooth antigen only. The Rawlings strain is now again in use, since it has been found possible to rejuvenate its virulence and protective properties. An improvement has been effected in preserving the pathogenicity of the strains for the vaccine by using the dried spleens of mice killed by an experimentally induced septicæmia. Further observations have been undertaken to determine the vexed problem of the date of expiry of the vaccine, and so far the protective properties, as judged from mouse experiments, have been found to be fully preserved for at least 12 months. If, as seems possible, the potency is preserved for a good deal longer than that, a considerable gain in economy will be effected. In addition, special observations have been made of the reactions following inoculation with the Rawlings strain in the rough and smooth phase respectively compared with a recently isolated strain of typhoid. No essential difference was found, provided that the regulations with regard to rest were observed and the inoculations were made, on foreign stations, in the temperate season of the year so as to avoid the hot weather. Finally, the prophylactic inoculation of children is considered and the

[1] See THE LANCET, 1933, i., 1027.

view is expressed that there is no sound reason why antityphoid inoculation should not be given to children aged two years and upwards; a diluted vaccine being used for this purpose on a scale of dosage which is outlined.

X RAY STIMULATION OF THE RETINA

THE retina can be stimulated by X rays as it can by light, but there is this difference, that the ocular media (including the lids) when opaque to light are transparent to X rays. When something, such as lead, opaque to X rays is interposed between their source and the retina a shadow may be cast analogous to the image normally produced by light, and defects in the retina which with clear ocular media would produce a scotoma may be made manifest. Moreover, a metallic foreign body in the globe may be made to cast a shadow on the retina which can be detected subjectively and roughly localised. A similar foreign body outside but adjacent to the globe will cast two shadows on the retina, one at its nearest point the other opposite to it, when the eye is in the appropriate position. Further, a piece of glass in the vitreous may be made to fluoresce by X rays. An apparatus taking advantage of these facts has been constructed and is described by Dr. Howard Pirie in an article[1] entitled "An Apparatus for Reading with Closed Eyes." It has already been successfully tested experimentally on several hundred people, mostly doctors, the one condition essential to success being that their eyes must be dark adapted. It would appear possible to make practical application of these facts in two conditions, first, the localisation of foreign bodies in or adjacent to the globe; second, the determination of the integrity of the retina when the lens is cataractous. The idea of adapting the apparatus to reading with closed eyes is theoretically explicable but unlikely perhaps to have any practical application.

A NATURALIST IN THE WAR

AN informative and amusing book, to which the hard-worked adjective "charming" can also be certainly applied, has been written by Dr. Philip Gosse on his experiences over a wide field during the war. He gives[2] the impressions of "a very unmilitary individual" who found himself suddenly involved in the great catastrophe, and he points out the valuable distinction between the civilian doctors and the other civilians who had joined up for the duration of hostilities in that the former would be carrying on their peace-time calling. To those civilian doctors who were attached to divisions and were occupied in tending the wounded in the field he gives the name of camp-followers, to distinguish them from other medical officers doing the professional work at the clearing stations and base hospital, and he thus adds considerable lustre to a group of activities with some fine and some not so fine implications. Dr. Gosse had many adventures, and saw many things up and down France and in India, and writes of them quietly and humorously, as though with the wish to persuade the reader that he had undergone no hardships and had run no dangers; it is easy, however, to read between the lines and see that he supped on his full share of horrors, and was fortunate in not forming one of the eight hundred of our profession who died in the cause. No military event or happening, however, is recorded unless it has some special bearing on bird or animal, and especially birds and cats come in for attention. The author is a real lover of animals, and the war caught him as a naturalist every whit as much as a doctor; and when this fervent admirer of cats, who wrote to cats at home to report his adventures abroad, came to be "G.O.C. Rats Second Army"—as he describes himself—he must have felt that he was bringing military resources and scientific knowledge under the ægis of the War Office to further the extinction of personal enemies. The Indian chapters form a fascinating conclusion to the book; on every page are vivid notes on the life and scenery observed, and intimate pictures of countless species of beast, bird, fish, reptile, and insect. The desire to hear more and in greater detail will often be felt by the readers of this book, and the author who produces this impression has scored a real success.

"CURRENT SCIENCE"

Sir Norman Lockyer is buried in the churchyard of the lovely little village of Salcombe Regis, near Sidmouth, and his tombstone describes him as astronomer. No mention is made of his creation of *Nature* though many thousand people of a scientific sort must thank him for their indispensable weekly who never think, and perhaps do not know, of what he did for celestial physics. *Nature* is unique and it does us greater service than in keeping scientific persons approximately au fait with what is going on in other branches of study than their own speciality. It is not surprising that it has had imitators: the American *Science* is perhaps not nearer than a nephew; *Current Science*, published from the Indian Institute of Science at Bangalore, is a son whose parentage is obvious. It is a monthly journal conducted by a group of Indian scientists, and is now in its second year. In the number before us there is a leader on the history of the "Asiatick Society," articles on anthropology and the spermatozoa of grasshoppers, an obituary of Sir Alexander Houston whose methods of water analysis have found fruitful application in the East, a bunch of letters, physical and biological, notes on recent research and books, and an account of the last Indian Science Congress. It all makes interesting reading, and should do in India what *Nature* does in a wider field. We wish it all success.

RADIOLOGY OF THE PHARYNX AND ŒSOPHAGUS

THE special supplements to the *Acta Radiologica* have hitherto been confined for the most part to monographs by workers in the countries responsible for the journal. The editors considered a departure from this precedent fully justified in the case of Dr. Richard Schatzki's studies on "mucous relief of the œsophagus,"[1] not only by the special importance of his work, but also by the circumstances which have prevented its appearance in Germany. "It would have been an appreciable loss to radiology," they say, "if publication had been delayed through circumstances for which the author is in no way to blame." We fully endorse this opinion, for Schatzki has extended the study of mucous membrane relief into a difficult region, the pharynx and œsophagus, with striking success. The important elements in his technique are: (1) the use of a rather thick barium paste; (2) previous administration of atropine, which renders the mucosa dry and sticky,

[1] Brit. Jour. Radiol., Feb. 1934, p. 111.

[2] Memoirs of a Camp Follower. By Philip Gosse. London: Longmans Green and Co., Ltd. Pp. 300. 10s. 6d.

[1] Schatzki, R.: Relief Studien an der normalen und krankhaft veränderten Speiseröhre. Acta Radiol., Suppl. xviii., Stockholm, 1933, 159 illus. and 32 tables.

and favours adherence of the bismuth to the mucosa; (3) the use of the recumbent position; and (4) "aimed" radiography with Potter-Bucky diaphragm, applied with close attention to detail and great patience. After dealing with the mucosal pattern of the normal pharynx and œsophagus, he gives an account of the alterations produced by inflammations, diverticula, varicose veins, and new growth, and is able to describe new and interesting irregularity of the œsophagus, which he calls "goffering." It seems often to be associated with traction diverticula. The section on varicose veins in the œsophagus is particularly good. Only about 20 cases had previously been published, but Schatzki discovered 45 in 18 months' work. Notable in this connexion is his study of the behaviour of the dilated veins during forced expiratory and inspiratory effort, and this section has earned the special commendation of Prof. Gosta Forssell, himself the pioneer worker in the study of mucous membrane relief. The monograph is illustrated by an abundance of clear and convincing radiograms, and is to be welcomed as an important contribution to radiological knowledge.

THE BRITISH POST-GRADUATE MEDICAL SCHOOL

A REVIEW of the circumstances which gave rise to the institution of the British Post-Graduate Medical School has been sent to us by the Dean of the School, and is now very timely. He sets out in an interesting manner the various movements which have culminated in the institution of the school. The first concrete effort was Sir Jonathan Hutchinson's, who some 40 years ago founded, and ran by individual effort, the Medical Graduates' College and Polyclinic, an organisation which was found by London practitioners to be of great value. It had connexion with no particular hospital, although certain special institutions and medical schools were associated with it; but the absence of any provision for beds, or any affiliation with the out-patient departments of hospitals limited its sphere. The next step was the formation of the Fellowship of Medicine and Post-Graduate Medical Association, whose activities have been regularly chronicled in our columns. This association has done and is doing valuable work and there has been no falling off in the facilities which it offers, or in the numbers taking advantage of them. But here again, having no one hospital with which it is particularly associated, it has no centre for its work. And so, some 20 years ago, and after many formal and informal deliberations among those interested in medical education, it became clear that a veritable centre was necessary, if the remarkable supply of clinical material to be found in London was to be utilised, not only in the training of London students but by providing information and instruction for all doctors of all nationalities. The next move was made by the University Grants Committee, at whose suggestion Dr. Addison, at that time (January, 1921) Minister of Health, appointed Lord Athlone's Committee "to consider the provision in London to meet the needs of medical practitioners and other graduates." The report of this committee included the recommendations, first, that a school should be attached to a hospital in London to be devoted solely to post-graduate instruction in clinical medicine, and secondly that an institute should be founded where training could be given in the principles of public health. The second recommendation came to fruition in 1926, when the foundation of the London School of Hygiene and Tropical Medicine was made possible by the generosity of the Rockefeller Foundation. The buildings of this school were opened in July, 1929, by H.R.H. the Prince of Wales, but the first recommendation remained to be fulfilled, and this at a time when the serious financial depression still being felt was beginning to occur. As soon as possible, however, Mr. Neville Chamberlain, as Minister of Health, set up a representative committee with terms of reference "to draw up a practicable scheme of post-graduate medical education centred in London," and the first conclusion of that committee was in reverse to what has fortunately happened, for it appeared to the committee impossible to set up an entirely new hospital and medical school to meet post-graduate needs, while for various reasons it seemed to them equally impossible to associate such a new school with any of the existing teaching hospitals. This seemed a dead-lock. In 1929, however, the position was altered by the new Local Government Act, providing that between 20 and 30 public general hospitals, with a total of some 17,000 beds, should come under the control of the London County Council. The provision of a new hospital, by using one of the old poor-law institutions as a nucleus, was seen to be practicable, and the selected one was the hospital in Ducane-road, Hammersmith, a comparatively new and well-equipped building, having about 400 beds. The committee came to the unanimous conclusion that the conversion of the Hammersmith Hospital would solve the problem. Then things happened. In 1931 a Royal Charter was granted to the school and the governing body was appointed, at a time when the financial crisis had become yet acuter. None the less, the Government of the day agreed to grant from national money the sum of £100,000, while the L.C.C. was found willing to expend a similar sum on such developments as were found desirable. On July 17th, 1933, the foundation-stone of the new building, the Hammersmith Hospital, was laid by Mr. Neville Chamberlain. The final developments will be found in the communication from the Dean of the School published in another column (see p. 606).

THE Royal Commission to inquire into the affairs of Durham University consists of the following: Sir Ross Barker, Major A. G. Church, Lord Moyne (chairman), Prof. H. R. Dean, M.D., Rev. F. Holmes Dudden, Countess Grey, Mr. T. F. Sibly, LL.D., and Mr. W. Spens.

OXFORD OPHTHALMOLOGICAL CONGRESS. — The twenty-fourth annual congress will assemble at Keble College, Oxford, on the evening of Wednesday, July 4th next, and the meetings will continue until the 7th. On the 5th there will be a symposium on the functional diseases of the eye, which will be opened by Sir Farquhar Buzzard from the neurological, Mr. Williamson-Noble from the ophthalmological, and Dr. William Brown from the psychological point of view. The Doyne memorial lecture will be delivered by Prof. Joseph Meller (Vienna) and will deal with tuberculosis in its relation to spontaneous, post-traumatic, and sympathetic ophthalmia. An address will be given by Dr. H. W. Barber on the ætiology and treatment of some conditions affecting the eyelids, and many papers will be read. Particulars of membership of the congress may be had from Mr. C. G. Russ Wood, the hon. secretary and treasurer, Hill House, Abberbury-road, Iffley, Oxford.

THE PREVENTIVE ASPECTS OF MEDICINE

A Series of Lectures in progress during the Winter Session at King's College Hospital Medical School

XIX.—PREVENTIVE MEDICINE AND THE LAW

JUST as the progress of preventive medicine must depend on the steady growth of accurate knowledge by the experimental method laboriously pursued in the various sciences, so also it needs to be fortified by the process of law. For just as there can be no happiness without health, there can be no civilisation without order, no order without law.

Law, acting in conjunction with the proved facts of preventive medicine, exercises an educative influence, which in time becomes far-reaching; a simple and familiar illustration will suffice.

Only a few years ago the floors of railway carriages and other places of public resort where smoking was in vogue were indescribably disgusting owing to the prevalent habit of promiscuous expectoration. When on March 24th, 1882, Robert Koch announced that he had discovered the tubercle bacillus and proved that tuberculosis was in fact an infectious disease, and that dried phthisical sputum containing the organism was the principal method of transmission, the law eventually intervened, forbidding the practice, at least in places of public resort. Even the man in the street knows now that his habit is not only offensive but a source of danger to the health of others; consequently the practice is almost extinct.

Another happy example of the beneficial effects brought about by the harmonious coöperation of law and medicine is the passing of the Therapeutic Substances Act, 1925, which makes it possible for the physician to have a guarantee that what is sold to him is what it professes to be, both in respect of potency and purity. The directions in which this guarantee can be given are being extended as scientific work in the laboratory enlarges knowledge. Similarly the Pharmacy and Poisons Act, 1933, empowers the Secretary of State, acting on the recommendation of the Poisons Board—a body representative of the physicians, the pharmaceutists, and the Government departments concerned—to regulate not only the manufacture and sale of poisons but also to prevent certain specified drugs from being sold retail, except upon a prescription issued by a registered medical practitioner, dentist, or veterinary surgeon (Part 3, Section 23). It may be anticipated that this power, wisely exercised, may check the dangerous habit of the public of dosing themselves with potent drugs without advice.

Legal enactments of one kind or another, whether by Acts of Parliament or by orders issued by Government departments, affect directly or indirectly almost every sphere of activity of preventive medicine. The purity of our food and drugs; conditions of housing and dwellings generally; the vast bulk of sanitary legislation; the safeguarding of our water-supplies from dangerous pollution; the regulation of the working conditions of machinery in factories to lessen the frequency of danger to human life and limb; measures to prevent the spread of infectious disease—all these and many others have engaged the attention of legislators. I propose to select three widely differing topics as illustrative of the harmonious working of law and preventive medicine: (1) recent legislation for the preventive treatment of incipient mental disease; (2) remedial legislation, with reference to the lessening of occupational disease and the avoidance of accidents, especially in reference to factories; (3) attempts to control the illicit traffic in narcotic drugs. (1) and (2) deal with local and national aspects of law, while (3) deals with the international aspects of law and preventive medicine.

RECENT LEGISLATION AND MENTAL DISEASE

Of all the ills that affect humanity none are so dreaded, both by those afflicted and those connected with them, as mental disorder. The mere existence of a person who has had to be "put away" is regarded as a grave reflection on the whole family, to be kept as a skeleton in a carefully locked cupboard. It is equally true that there is no subject on which there has been more profound misconception and misunderstanding in the mind of the public. This attitude has been intensified by novelists, dramatists, and by two or three organs of the press which exhibit the most reckless disregard for the truth, provided they can secure sensational headlines. The impression has been created that it is comparatively easy to arrange for the illegal detention of persons in asylums at the instigation of designing relatives, aided by venal and unscrupulous doctors. It may be greatly doubted whether this was ever true. It is certain that for many years past it has been a mere travesty of the truth. The question was carefully examined by the Royal Commission on Lunacy and Mental Disorder, which reported in 1926. This was an entirely impartial tribunal and its conclusions are so significant that they are worth quoting:—

"We have considered the evidence tendered from many sources on the question of improper detention, and have examined a number of typical cases in which this allegation was made. In none of the cases investigated by us were we satisfied on the evidence that improper detention was suffered, while the general evidence which we received was reassuring. In the result we were satisfied that, in practice, instances of insane persons being wrongly certified or improperly detained must be of the rarest occurrence."

Even where it is clearly necessary that the insane should be placed under institutional treatment, certification carries a stigma which has a prejudicial effect, not only from the personal but also from the professional, social, and business aspects. All these factors combine in making the public extraordinarily sensitive on these matters, an attitude which has militated against the treatment of the mentally afflicted and has rendered it difficult to apply remedial measures in the early and incipient states of these disorders.

To understand the effect of the Mental Treatment Act, 1930, it is necessary to survey briefly the previous history of legislation dealing with certification of the insane. Under an Act passed in 1828, a person could be certified on one medical order signed by two medical practitioners. An Act passed in 1832 required two separate medical certificates; these merely stated that the person was insane. A step forward was attained by an Act passed in 1845, which required two medical certificates which were not mere declarations of insanity, but the doctors were required to state the facts on which their opinion was based. Nevertheless, public prejudice was still strong, and was faithfully reflected in the Lunacy Act, 1890, which was largely a consolidating Act of previous enactments relating to the care of the insane. It was drafted with the primary object of safeguarding the liberty of the subject, and from this point of view it was a success. It abounds with threats and penalties against the patients' relatives, friends, or doctors who might be supposed to be guilty of sinister designs against his liberty and welfare. It enacts that no person may be received as a patient in an asylum unless he has been certified as a person of

unsound mind; that every such person shall be discharged immediately he is no longer certifiable; that he shall not be ill-treated or neglected while under detention, and that in the event of death occurring while in the asylum the circumstances are to be specially reported, with the possibility of a searching and possibly censorious inquiry; this obtains at the present day.

The 1890 Act was defective inasmuch as (1) it made no provision for the treatment of incipient mental disease; and (2) it afforded no effective protection to doctors signing lunacy certificates, even when they had acted with reasonable care and good faith. Hence it is hardly surprising that, even in cases where it was obvious that patients should be under skilled medical care, practitioners have refused to sign lunacy certificates for fear of being mulcted in heavy damages by excitable though possibly well-meaning juries.

A notable advance has been effected by the passing of the Mental Treatment Act, 1930 (20 and 21 Geo. 5, c. 23).

Section 16 of the Act provides that no person presenting a petition or doing any act with the view of signing or carrying out anything purporting to be a reception order, or signing a certificate, shall be liable to any civil or criminal proceedings unless they have acted in bad faith or without reasonable care. Moreover, leave will not be given to the plaintiff to commence an action unless the court is satisfied that there is substantial ground for alleging that there has been bad faith and absence of reasonable care. Thus a long overdue measure of proper protection is afforded to medical practitioners and others concerned, provided always they have acted in good faith and with reasonable care.

Under the new Act any person desirous of voluntarily submitting himself for treatment may, on written application, be received as a voluntary patient, not only in a mental hospital but in any hospital or other place approved by the Board of Control. No medical recommendation is required in such cases, except in persons under 16. Any such patient may leave the institution on giving 72 hours' notice in writing to the person in charge. Thus there is no detention and no certification.

Those incapable of volition may be received into any institution or place approved by the Board, but in their case application must be made by the husband, wife or other relative, and supported by two medical practitioners, one of whom must be approved by the Board of Control. No person interested in a licensed house may sign the supporting recommendation. Treatment is limited to a period of six months, but may be extended for short periods with the sanction of the Board. No magisterial intervention is necessary. The term "mental hospital" is to be used instead of the expression "asylum," and the word "lunatic" is confined to those who are criminal lunatics.

In so far as these kindly and humane provisions may afford early and preventive treatment in cases of nervous and emotional instability, it may be hoped that among other benefits they will bring about a diminution in that most terrible of domestic tragedies —suicide.

The Mental Treatment Act is designed to facilitate treatment without certification in the early stages of mental illness. The Act takes a great step forward in preventive medicine, because the chances of securing early recovery and of preventing a permanent mental breakdown depend very largely upon the early application of skilled treatment. The medical superintendent of a public mental hospital recently published the following significant figures:—

Observation on a group of cases at the hospital showed that the recovery-rate among those who had been ill for less than three months when they first entered the hospital was approximately 57 per cent. In cases where the illness had existed over periods ranging between three and twelve months prior to admission, the recovery-rate was 34 per cent.

The Lunacy Act, 1890, permitted the treatment of patients only under certificate, except that private paying patients could be admitted as voluntary boarders to licensed houses and registered hospitals. For the great mass of patients certification was the indispensable preliminary to treatment, and they would normally go to the public "asylums" where everyone under treatment was also under detention. The stigma attached not merely to certification but to the asylum. It resulted naturally that the friends of a person who was becoming mentally unbalanced shrank from certification and delayed bringing the sufferer within the reach of treatment until the disorder had progressed and the chances of recovery had been correspondingly compromised.

To sum up, the Mental Treatment Act, 1930, affords new facilities for the treatment of mental illness without certification in three directions:—

(*a*) Out-patient treatment at out-patient clinics.

(*b*) Treatment as voluntary patients, which is now extended to rate-aided patients, whereas before it was limited to the private patients.

(*c*) Temporary treatment for those who are incapable of volition.

The removal of certification as a preliminary to treatment for a large number of cases will inevitably ensure that many will present themselves for treatment in the earlier and curable stages. Further, these forms of treatment may, under the Mental Treatment Act, be given at general hospitals, which is a step towards assimilating the treatment of mental illness to physical illness. In particular, the admission of rate-aided voluntary patients to public mental hospitals puts an end to the system under which everybody in a public mental hospital was a certified patient under detention; and, as the public mind becomes accustomed to patients going voluntarily to and from public mental hospitals, this will in time mitigate—if not break down—the stigma which has hitherto attached to the asylum where people were "put away."

LEGISLATION DESIGNED TO PREVENT OCCUPATIONAL DISEASE

In 1833 the public conscience was aroused by the dreadful conditions of children employed in the cotton mills; consequently an Act was passed with a view to regulating the labour of children and young persons. On of the most important provisions of this Act was Section 17, which established the principle and authorised the appointment of paid inspectors of factories who would not be subject to local influences and who, being invested with executive and judicial powers, would be independent of the employers. The importance of this reform can hardly be exaggerated, for these officials were the forerunners of other paid inspectors in the public health, poor-law, and other social spheres whose beneficent activities form such a marked feature of out modern social life. The four inspectors appointed by the King under sign manual seem to have been conspicuous for their tact and wise judgment, for they commenced their delicate and highly unpopular duties by organising an educative and persuasive series of conferences with the principal manufacturers of the districts and inviting comment, which was freely forthcoming. They enlisted the goodwill of both employers and employed, but the difficulties to be surmounted were formidable; bitter controversy raged between the philanthropist and those employers who feared that their material interests would be affected, and who were supported by a school of

political thought of that day which was opposed to any kind of State interference with trade or industry.

The early efforts of the inspectors were directed to limitation of the working hours of young children, together with insistence upon due provision for their education, and the difficulties in the way of effecting this much-needed reform were not minimised by the fact that registration of births was not compulsory until 1837, while schools were scanty and not infrequently kept by persons who were themselves grossly illiterate.

It was not until amending Acts were passed in 1844 and 1847 that some attempt was made to stop the gross overworking of women, who in some cases were regularly employed for as much as 14 or 15 hours a day. The legal maximum of daily hours for women and young persons in textile factories was fixed at the present figure of ten hours, with the gratifying result that, partly through the closer application which the workers could give, and partly through the speeding-up of the machinery, the inspectors were able to note a "marked change for the better" in the health, appearance, and contentment of the work-people. In course of time this was gradually extended to other trades, e.g., potteries and steel grinders, which latter class were described as "wild tribes answerable to no discipline." After the late war it came to be realised that as much output could be obtained in an eight-hour as in a ten-hour day, and this is now the normal period of employment in most factories.

The Factory Act, 1844, marked a noteworthy advance in the appointment of certifying factory surgeons, who are required to make full investigation and report on any accident which incapacitates the injured person from resuming work on the following day. It also established the principle of requiring certain machinery to be fenced in, to prevent the shocking accidents which too often occurred. This legislation has been strengthened and advanced by various acts passed from time to time, which were embodied in a Consolidation Act, 1878. By this time the higher standard of safety and the great improvement in the health, well-being, and contentment of the workers began to be more generally appreciated by both employers and workers.

The Factory Act of 1891 made a further advance by empowering the Secretary of State to insist upon and enforce such measures as are reasonably practicable to meet the necessities of the case, where any machinery, process, or description of manual labour is found on inquiry to be dangerous or injurious to health, life, or limb. Now not only "factories," but also docks, wharves, quays, and laundries have been brought within the scope of this legislation, the Secretary of State drawing up and issuing appropriate regulations. Cases of anthrax, lead poisoning, and phosphorus and arsenical poisoning still occur, but show a gratifying and marked decrease, especially lead poisoning. Just tribute may be paid to the splendid research work, now classical, carried out for so many years by the first medical inspector of factories, the late Sir Thomas Legge.

We live in an age when new and improved industrial processes bring with them fresh and complex problems. Examples may be found in the great development in the manufacture of artificial silk, giving rise to a new form of carbon bisulphide poisoning; conjunctivitis, produced by the evolution of hydrogen in spinning rooms; ulceration, caused by the increased use of chromium plating; jaundice in connexion with the use of trinitrotoluene; aplastic anæmia, caused by benzol fumes in connexion with lacquer work; and occupational epithelioma.

The bitter hostility and resentment aroused by the legislation of 1833, 1844, and 1856 is to-day largely, if not entirely, a matter of history. Industrial life of to-day is permeated by a wiser, kindlier, and more humane spirit. The employer of to-day sees that to have a contented, healthy worker is not only desirable in itself but is advantageous to him from a merely pecuniary point of view. Employers and employed alike welcome and eagerly adopt measures suggested for increased safety and for the prevention of ill-health. The employment of welfare workers is only another manifestation of the same spirit. The history of factory legislation is an illustration of my thesis—viz., the beneficent effects of preventive medicine in conjunction with wisely administered law.

ILLICIT TRAFFIC IN DANGEROUS DRUGS

Perhaps no better illustration of the coöperation of law and preventive medicine can be found than the efforts made by various governments to check the illicit traffic in dangerous drugs, notably opium and its derivatives, morphine and heroin, cocaine and hashish or cannabis indica. Even the mental, moral, and physical ruin associated with addiction to these drugs is not their most dangerous aspect; they carry a communal as well as an individual menace, inasmuch as they act as crime stimulants, readily helping criminals more to endure the physical and mental strain involved by their activities. Dr. Lawrence Kolb, who has devoted much attention to this subject for the United States Public Health Service, states:—

"A criminal who takes cocaine is for the time being more efficient as a criminal, *unless he takes too much*. The drug does not arouse criminal impulses in anyone but it enhances the criminal's mental and physical energy so that he is more likely to convert his abnormal and anti-social impulses into action."

It is well known to the Indian police authorities that hashish when persistently smoked with a mixture of tobacco induces a peculiar maniacal intoxication, under the influence of which grave crimes may be committed.

The testimony of a notorious female criminal, who herself had organised dope parties to celebrate her release from prison, is even more striking.

This woman spent one-third of her life in American, French, and English prisons. She has described herself as a "prize graduate of the Chicago School of Crime, and attended classes in the New York College of Crime and passed out with honours, but did most of her post-graduate work in New York and London." She was not a dope addict, and has given in her own words her views on the dangers of the practice to criminals.

"Nine out of every ten crooks are drug addicts. It is because they are under a nervous strain when they are working and have too much idle time between jobs. I have never become a drug addict, though I have tried it and taken it in every way as part of my education. I do not like the taste or the smell of the stuff. I always had nerve enough that was real without requiring false courage. Also I was a hard drinker when I drank, though I never drank by myself, and only at long intervals. The drinker does not take dope generally, and vice versa. Drug addicts are easily lured into crime, because their will-power is so weakened that they lose all sense of moral differentiation. Dope-fiends and panhandlers (i.e., professional beggars) as stool-pigeons (i.e., police informers) are amongst the biggest assets the police have in ferreting out crime."

The cunning and ingenuity displayed in importing and distributing these drugs is remarkable, and the difference between the cost of production and the retail selling price is so enormous that very large profits are realised by illicit traffickers. The Excise Branch of the C.I.D. of the Indian police found that a 25-oz. tin of cocaine imported from Germany cost the importer only £25, was sold wholesale at £200–£250, and retail at double or even treble the wholesale price. The profits obtained in other countries are equally substantial, even after allowance has been made for bribes.

It is not possible to estimate with any degree of

accuracy the extent of this traffic or its results in terms of human degradation. It is certainly widespread. The Turkish Government found that over seven tons of morphine and heroin were exported to foreign countries in 1930, none of which reported the importation of any drugs at all from Turkey. It is also known that factories exist in Germany, Hungary, Switzerland, France, and Czechoslovakia, from which large quantities are exported without the knowledge of, or in defiance of, the authorities. Yet it is only within the last 25 years that the nations have been aroused to some sense of their communal responsibility in respect of this evil.

In 1912 representatives of all European countries as well as of the United States, China, and Japan, met at the Hague and agreed upon certain resolutions, known as the Hague Convention, the most important of which was that the signatories bound themselves to

"limit to medical and legitimate purposes the manufacture, sale and use of cocaine, morphine, and their respective salts and to control all manufacturing and distribution and to impose a licence to carry on these operations."

This convention was little more than a pious aspiration, but it at least showed that the nations were becoming aware of the grave possibilities of mischief if this traffic was not controlled. It was not, however, until after the war that an advisory committee was set up under the auspices of the League of Nations in order to secure the fullest possible coöperation between the representatives of the various countries to prevent the use of dangerous drugs for other than legitimate purposes. This committee established what is known as the import and export certificate system, under which every importer and exporter must be certified by his own government. The restriction of shipments rests with the importing country. The Geneva Convention of 1928 pledges the contracting Governments to pass

"effective laws or regulations to limit exclusively to medical and scientific purposes the manufacture, import, sale, distribution, export and use of specified narcotic and dangerous drugs, and to control all persons engaged therein."

Mr. Arthur Woods, formerly a police commissioner in New York and assessor to the advisory committee above-mentioned, has devoted much attention and valuable research to this subject, considers that this traffic cannot be stopped until the following provisions are enacted :—

(1) Every country must be induced to limit the making and distribution of narcotic drugs to medical requirements.
(2) All exports and imports of these drugs must be kept under strict control and supervision.

He is emphatically of opinion that it is hopeless effectively to control smuggling, and that the true remedy is to keep the drugs from reaching the smuggler. It is certain that it is absolutely necessary to tap and control the supply at its source, and this can only be done by all civilised countries acting in conjunction. Recently Turkey and Persia have joined the convention as signatory powers.

No amount of conventions or agreements are of any real use unless all governments not only adopt the laws agreed upon but rigorously enforce them, and, in my submission, the penalties imposed both for the illicit manufacture and the smuggling of these drugs are in many countries wholly inadequate. The profits are so large that mere pecuniary penalties fail to act as a deterrent; fines are regarded merely as part of the "overhead charges." In my view sharp sentences of rigorous imprisonment should be imposed upon every conviction for a first offence (for the culprit has usually been carrying on the traffic for a considerable time before detection), and for subsequent convictions, in addition to increased terms of imprisonment, the lash should be applied. Nothing short of this will act as an efficient deterrent.

It is a matter of satisfaction that the authorities of the Dominion of Canada have taken steps to control the traffic in narcotic drugs in a thorough and systematic manner, and with a considerable degree of success.

Mr. C. H. L. Sharman, the chief of the Narcotic Division in the Canadian Department of Health, has detailed the steps taken, both by legislation and administration, in an article contributed to the *Police Journal* (1930, p. 535). It is forbidden to handle narcotic drugs unless licensed by the Federal Department of Health, and all narcotic drugs imported are covered by permits not only from Canada but also from the country of origin. One hundred and fifteen firms are licensed, who are required to report monthly every single narcotic transaction which they have conducted. These are recorded against the registered practitioner or retail druggist concerned. Retail drug stores are required to keep a register, which is regularly inspected and compared with the prescriptions covering the entries. Prescriptions containing narcotic drugs may not be ordered over the telephone, and such prescriptions properly dated and signed must be on the actual premises before the drugs can be supplied. The registrars of the various medical, dental, and veterinary colleges in Canada advise the central authority from time to time of alterations in their lists of those authorised to practise their respective professions. The use of international mails for the transmission of narcotics is forbidden, and wholesalers are prohibited from shipping narcotics except by registered mail. Recent legislation has empowered judges to order the lash for drug traffickers and heavier sentences may be and have been imposed.

In seven years 662 persons have been deported as a result of conviction for selling or unlawfully possessing narcotic drugs, of which number 519 were Chinese. Close coöperation is maintained with the United States in this matter, a point of importance in dealing with a frontier line of over 4000 miles. If all the countries adopted equally well-coördinated measures, this evil traffic would soon be brought under control.

I have studiously avoided controversial topics, as I deemed it more profitable to show how Law and Medicine, when acting in harmonious coöperation, work together for the common good, rather than to emphasise differences between the two professions which will tend to diminish as each endeavours to understand the other point of view.

A. DOUGLAS COWBURN, M.R.C.S., D.P.H.,
of the Middle Temple, Barrister-at-Law;
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HOSPITAL EXTENSIONS.—Swansea Hospital is to be enlarged by the erection of a new block with 34 beds and a radiological department to cost £11,215. —The report for 1933 presented to the annual meeting of the board of management of the Royal Buckinghamshire Hospital at Aylesbury states that the pressure upon accommodation and the strain upon the staff has compelled a review of the whole situation. Twenty additional beds are required in the two main wards, with two single-bed wards and a single isolation bed ward. The out-patients' department, moreover, needs to be entirely reorganised. It is estimated that the work will cost £30,000 and that an additional income of £3000 will be required. The meeting agreed to the scheme in principle. Last year ordinary expenditure slightly exceeded ordinary income. With 80 available beds there were 1470 in-patients, the largest number on record. The contributory scheme produced £4707.

SPECIAL ARTICLES

MEDICAL RESEARCH COUNCIL

PROGRESS IN 1932–1933

(*Concluded from p. 536*)

Viruses and Bacteriophages

Propagation of viruses.—The difficulty of cultivating viruses under artificial conditions continues to be an obstacle to their fuller investigation. Dr. F. M. Burnet has succeeded in cultivating a number of viruses on the chorio-allantoic membrane of the developing chicken in the incubated egg, and has shared experience of methods with Colonel Stevenson and his co-workers at the Government Lymph Establishment at Hendon, who are experimenting with the use of incubated eggs for the production of a bacteria-free lymph for practical vaccination,

Dr. Burnet has continued the attempt to arrive at a natural classification of the bacteriophages; of those acting on the dysentery-coli group of bacilli 11 groups have been clearly separated by their antigenic properties, as determined by specific antisera and other tests. This and other evidence gives added support to the conception of the bacteriophages as independent transmissible agents analogous to the viruses, but is incompatible with d'Herelle's view of them as mere variants of a single plastic species of ultramicro-organism.

Photo-dynamic inactivation of viruses.—Dr. J. R. Perdrau and Dr. C. Todd have continued the extension to some of the pathogenic viruses of the method, previously described for the bacteriophages, of inactivation by methylene-blue in the presence of light and free oxygen. They have discovered that some viruses, when thus deprived of their infective power by the photo-dynamic process, act as efficient vaccines. For example, a single injection of the inactivated virus of canine distemper confers on the ferret an immunity lasting beyond the period over which it has so far been possible to test its duration. Dogs also seem to be efficiently protected by a single small injection of the virus inactivated by this method, and the method is to be tested under practical conditions. The susceptibility of viruses to photo-dynamic inactivation varies; some, e.g., foot-and-mouth disease, are very resistant; others, e.g., vaccinia, are easily inactivated but yield a product poor in immunising power. It is hoped that this method may prove of value in some viruses which infect man.

Infective tumours.—The work on tumours transmissible by cell-free filtrates has now been extended to the case of an infective fibroma, discovered by Dr. R. E. Shope in a wild American "cotton-tail" rabbit. Opinions will doubtless be divided as to whether this is a true tumour. The original growth has the histological character of a fibrosarcoma. Of two strains of the virus one, in the hands of Dr. W. E. Gye and Dr. W. J. Purdy, has continued in successive passages to reproduce in English rabbits the sarcoma-like growths originally described. The other, in the hands of Dr. C. H. Andrewes, early changed its character, and now at each transfer produces only inflammatory and degenerative lesions. Yet each strain still produces complete immunity to the characteristic effects of the other. Thus the virus, retaining still its immunological identity, produces (1) inflammatory lesions, and (2) growths which would be classed as tumours if their origin were unknown.

Optical methods.—The rapid progress recently made in the perfection of the photographic images obtained of some of the larger virus particles, and in the brevity of exposure sufficing for their production, justifies confidence that the application of the optical method will be still further extended by the technical improvements. Some particles of a virus or bacteriophage, though already rendered visible, cannot be sharply photographed with radiations of the shortest wave-length, about 275 millimicrons, which can be used with the optical system yet available. Mr. J. E. Barnard and Mr. J. Smiles have been engaged in the design of a new objective for use with a wave-length of 257 millimicrons, given by a line in the ultra-violet spark spectrum of cadmium.

Some Statistical Inquiries

Nephritis.—Dr. A. A. Osman, assisted by Dr. H. G. Close, is making an extensive statistical inquiry into the incidence of the different types of nephritis in this country. Microscopic examinations of the kidneys of all cases coming to post-mortem at Guy's Hospital are being made, in an attempt to discover the frequency of renal diseases at different ages. With the help of the infectious diseases service of the London County Council, an investigation is being made of the effect of previous tonsillectomy on the incidence of nephritis after scarlet fever.

Diabetes.—Mr. E. Lewis-Faning, secretary of the statistical committee of the Council, has coöperated with Dr. R. D. Lawrence in an endeavour to estimate the average advantage in length of life enjoyed by diabetics treated with insulin, as compared with patients treated before the introduction of the modern method. Since the data are necessarily still scanty, and as the individual circumstances of patients vary enormously, conclusions can at present be only tentative; but there would seem to be no doubt that the rate of mortality suffered by patients in the pre-insulin days was considerably in excess of that suffered by the patients now treated.

Rectal cancer.—Mr. W. B. Gabriel and Dr. Cuthbert Dukes are inquiring into the after-histories of patients with rectal cancer treated at St. Mark's Hospital, London, by operation alone or with radium. Classified records are now available of all cases of cancer of the rectum or colon admitted there since 1910. The records have confirmed the bad prognosis in cases of rectal cancer in which metastases are found in the regional lymph nodes at operation. Attempts are being made to correlate the proved extent of the upward lymphatic spread of columnar-celled cancer of the rectum with the length of subsequent survival.

Head injuries.—Dr. W. Ritchie Russell has classified over 450 cases of head injuries, so that the case records may be available for statistical analysis. The patients are re-examined 6 and 18 months after the original injury, to determine the extent of any residual damage to the brain. The changes in the brain in fatal cases are being investigated microscopically.

Pyelitis of pregnancy.—Dr. Dugald Baird has continued his work on infections of the urinary tract in pregnant women. By means of a follow-up system for patients, a study is being made of the after-effects

of pyelitis of pregnancy; over 100 cases have now been observed over periods of from two to five years.

Rheumatic fever.—Dr. E. C. Warner has completed the inquiry into the nutritional and family histories of children with rheumatism. With the help of Miss M. L. Clark, working for the nutrition committee, data have been obtained as to the ordinary diet of each member of the families investigated. The results are being prepared for publication.

Dr. H. J. Gibson and Dr. W. A. R. Thomson's investigation of an extended series of patients and controls has shown that hæmolytic streptococci are not more frequently present in the throat in rheumatic cases than in normal children in the same environment.

Mental deficiency.—At the Royal Eastern Counties Institution, Colchester, Dr. L. S. Penrose and Miss M. V. Matthews and others have continued an inquiry into the ætiology of mental deficiency. Over 800 cases have now been studied. The family histories of the patients are being analysed, with special reference to the genetic factors in various types of mental defect. The question of the inheritance of epilepsy is being examined, and attempts are being made to determine the significance of birth order and parental age in the ætiology of conditions such as mongolism.

Studies in Immunity and Epidemiology

Dr. A. S. Griffith's work with Prof. J. B. Buxton and Mr. R. E. Glover on the immunity given to calves by vaccination with B C G vaccine has been extended. It has been found that the immunity lasts for periods ranging from 5 to over 12 months. The proportion of inoculated calves which resisted infection by virulent tubercle bacilli gradually diminished from 100 per cent. at the third to 14 per cent. at the twelfth month; but all the protected calves which became tuberculous were less severely affected than the controls.

Prof. W. W. C. Topley and Prof. M. Greenwood, working with Dr. J. Wilson on infectious ectromelia in mice, have devised a method of active immunisation which gives almost complete protection to experimental infection. It has led to the study of the degree to which an animal which has been immunised and then infected is a source of risk to normal non-immunised companions—a problem of much practical importance in relation to human and animal disease.

From studies on mouse pasteurellosis it appears that the factors that determine virulence are not those that determine infectivity. It is hoped that it may be possible to define, more accurately than in the past, the characters of an "epidemic" strain of a particular bacterial species, though the biological factors on which infectivity depends are as yet unknown. With Prof. H. Raistrick, studies are being made of the chemical factors in immunity to mouse-typhoid.

Dr. Marion Watson is making experimental studies of the influence of diet on resistance to bacterial infection done under the supervision of Prof. E. P. Cathcart and Prof. W. W. C. Topley.

Progress has been made by Mr. G. A. C. Gough, Ph.D., at the National Institute for Medical Research, with the chemical identification of the components of the complex carbohydrate previously separated from the tubercle bacillus grown in large amount for this purpose by Captain S. R. Douglas; this substance is one of those to which the name "haptene" is given, from the part they play in immunological reactions.

VIENNA

(FROM OUR OWN CORRESPONDENT)

THE PUBLIC HEALTH OF THE CITY

THE radical change which has taken place in this country within the last four weeks has had a marked influence upon the general health conditions, and will doubtless be more noticeable within the coming months. To understand the state of things, it is necessary to look back. Vienna was formerly noted for the prevalence of tuberculosis; in fact, it has been termed "morbus Viennensis" in some medical publications and investigations. When in 1918 the Imperial Government was overthrown and the socialistic party took the power in its hands, a chief interest of the new leaders was the improvement of public health, and the paramount idea was to provide healthy dwellings for the large bulk of the working classes, where tuberculosis was prevalent. Within these 16 years the city of Vienna has erected a large number of colossal tenement houses, each dwelling provided with abundant air-space and light, with all equipment for hygienic cooking and sleeping—gas kitchens, electric light, sleeping porches, all windows facing broad streets or spacious garden yards. The result was a sudden drop in the incidence of tuberculosis and a concomitant drop of the mortality figures. The last report stands at 13 deaths per 10,000 inhabitants, as compared with 19 per 10,000 in 1922. Great interest was taken by the party ruling Vienna up till now in prophylaxis, and especially in prophylactic care of the children and juveniles. Every new-born baby was entitled to a free "baby linen packet," consisting of a half dozen each of baby blankets, sheets, and shirts, which the municipality provided.

THE CHILDREN AND THE DOLE

Furthermore, a number of "kindergartens" were opened, mostly in combination with the large buildings mentioned above, where the children from 3–6 years were looked after by trained kindergarten nurses, and these could get breakfast and light meals free of charge during the time their mothers were working. The health of the school-children was regularly inspected by school doctors at least once every two months, and once yearly a tuberculosis test was made (Pirquet's test) on every school-child. In summer time a great number of children were sent out to country places or the mountains by the combined efforts of the municipality, the Krankenkassen, and the Government, whilst the organisation of "free meals for the needy," which had been instituted by the "Save the Children Fund" soon after the war, persisted until lately, although to a somewhat diminished extent. The results of these really whole-hearted and generous efforts were reflected in the constant improvement of general public health, the fall of infant and children mortality, first in Vienna and then in the provinces, where similar lines of prophylaxis were soon followed. This favourable trend was interrupted in 1931, when the grip of economic crises began to be felt by communities all over the world. Whilst the number of unemployed rose constantly, the municipality of Vienna had to cut down the expenditure for public feeding, and the grown-up population as well as the children responded to the inevitable with an increase

of morbidity and mortality; while in the provinces, where the industrial districts are still worse off than the Vienna population, the same occurred. Many inhabitants of the municipal dwelling-houses were unable to pay their modest rents, but it must be added that no evictions resulted. The families had to live on their dole, which was being constantly diminished. Of the industrial population of Vienna, which can be estimated at about 600,000, or 30 per cent. of the total, no less than 70,000 have no other income whatever than the dole, which amounts to 18 Austrian shillings (equal to 12 English shillings) a week, but running up to 22 shillings if there were more than two children in the family. Another 50,000 persons get, besides the dole, an "educational bonus" of 4–12 shillings per school-child a week.

THE AFTERMATH OF THE OUTBREAK

Two months before the revolutionary outbreak a census was taken in the municipal dwellings. Altogether the city of Vienna owns 69,000 flats, with over 200,000 inhabitants distributed over the whole area of the city, and situated in 42 great dwelling-blocks, all of which were erected after the war. The report of the municipal health office will be published soon, but the conditions have suddenly undergone a grave change. Owing to the disastrous occurrences in the city, many hundreds of families have lost their income absolutely; of the bread-winners, some "fell in action," some are in prison, many are thrown out of work, with no prospects of obtaining it in the near future, and without the dole. Many flats have been ruined, or will be unfit for residence during weeks to come. Apart from the bodily suffering, the experience of the bombardment had a fearful effect on the mentality of hundreds of women and children. This is in Vienna. In the provinces the hardships are chiefly of a physical nature due to lack of food, fuel, and money. What the actual effects upon public health will be cannot yet be stated. That the lack of the necessities of life will materially influence it for the bad among the thousands of persons involved in the upheaval is certain. Already extensive action is going on, headed by the authority of the Government and the highest personages of the Church and Society, to provide funds for the most needy; free meals for the starving and some supply of fuel and clothing for the families of the dead and imprisoned are already organised. Charitable and political organisations in Czechoslovakia, Belgian, and other countries have made arrangements to receive some 6000 children for various periods, so as to meet some of the destitution as far as possible. About 74,000 working men were actually involved in the fighting, and another 20,000 are politically "blemished." The figures concerning the victims of the fighting are now available, and it would appear that 293 persons were killed and 890 wounded (including 2 children and 19 women killed), but a few persons are missing still, whose fate is unknown. Thus the average of casualties due to artillery fire is low, but not so the moral effect.

As regards the past social work of the overthrown socialistic party in behalf of public health, it is asserted by the existing State authorities that all activities and institutions found to be really useful will be upheld, and that the funds for the purpose of old-age pensions, sick relief, prophylactic and hygienic care of the population will all be continued, and that the welfare of the public will suffer no detriment.

UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

MORTALITY IN 1933

As usual, a "pre-view" of mortality statistics is given by analysis of the records of the Metropolitan Life Insurance Company. This company reports that there is every sign that the general death-rate both in the United States and Canada for the year 1933 will be the lowest on record. Its own records for insured people find confirmation in early reports from the vital statisticians of half a dozen States. In Rhode Island the mortality has been reduced by 4 per cent., in Ohio by 5 per cent. Other States estimate declines on the basis of nine or ten months returns. The United States public health service reports a decrease of 1·8 per cent. in the mortality in the 85 large cities. This record is all the more gratifying in that 1933 began with an influenza epidemic and marked the low point of business activity. The Metropolitan reports with especial pleasure a further decrease in the death-rate of children and adolescents, both coloured and white. The death-rate among coloured children from 1 to 4 years of age is only one-quarter of what it was in 1911.

The fall in the death-rate from tuberculosis has not been interrupted, and deaths from this cause have decreased by 20 per cent. since 1930. In the same period the death-rate from diphtheria has been cut in half. When the rates are standardised for age, even heart disease is shown to be less important as a cause of death than in the past. Cancer and diabetes show increases both in the crude and standardised rates, though the increase in the latter case is not alarming.

The death-rates from alcoholism of the Prohibition period are reviewed. The lowest rate of all time from this cause was reported in 1920, the first Prohibition year. From then until 1926 the rate increased; from 1926 to 1929 it remained unchanged; from 1929 to 1933 it has fallen steadily. Last year gives the lowest alcoholic death-rate since 1922.

SOCIAL HYGIENE

Annual reports from the federal services show evidence of progress in the control of venereal disease. The army experienced the lowest rate for venereal disease in its history—42 per 1000. Gonorrhœa is still the most important disease from the point of view of lost time, tuberculosis taking second place, and syphilis third. The average time lost per case of gonorrhœa was 42·1 days. In the navy the venereal disease admission rate is somewhat higher, being 58 per 1000 for forces ashore in the United States and as high as 405 per 1000 for forces ashore in China. The high rate in China is to be made the subject of drastic reform.

Throughout the country the work in social hygiene has been increased, and the facilities for carrying it on have been decreased by the economic situation. Investigations by officers of the American Social Hygiene Association indicate that there has been an increase in commercialised vice. This was observed quite markedly in connexion with the World's Fair at Chicago. Other problems have arisen in connexion with the Civilian Conservation Corps Camps. It has been the ruling of the Army Council that men becoming infected with venereal disease are to be discharged immediately as a disciplinary measure. While the value of such a rule as discipline can be

understood, the danger of distributing acute cases of venereal disease from the camps to the home environment can also be seen and has given rise to protest. It is understood that recently the surgeon-general of the army has recommended that some treatment should be given to the workers so infected before they are discharged.

IRELAND

(FROM OUR OWN CORRESPONDENT)

THE "CUTS" BILL

THE Local Services (Temporary Economies) Bill is pursuing a slow course through its committee stage in the Dáil. Last week an amendment which proposed to exclude medical officers from its provisions was defeated after a considerable debate. There are still a number of other amendments on the paper intended to protect to some degree the hardships proposed to be imposed on the various classes of officers of local authorities, but so far it appears as if the Government were going to decide every question by a party vote.

WORKMEN'S COMPENSATION AND MEDICAL ATTENDANTS

While the Workmen's Compensation Bill was under consideration in the Senate a few weeks ago, an amendment was introduced to give power to the court deciding a claim for compensation to a workman to make an order that fees for medical attendance should be paid to a medical attendant to whom fees might be due, the amount of the order not to exceed £5. The payment is to be at the expense of the employer. There is no doubt that at present a great deal of medical attendance on injured workmen who are entitled to compensation goes unpaid. Representatives of the medical profession had approached the Minister for Industry and Commerce with a request that he would make provision to secure the payment of fees due for medical attendance, but he was unwilling to go further than the amendment just quoted. It was far from satisfactory to the medical profession, but it was thought better to accept it than to gain nothing. When the Senate's amendment came to the Dáil, it was proposed by a deputy on the Government side to reduce the sum of £5 to £2, but after some debate the proposal was rejected without a division, only three members supporting it.

UNIVERSITY REPRESENTATION IN THE DÁIL

A Bill is before the Dáil at present intended to abolish university representation in Parliament. Under the Government of Ireland Act, 1920, the Parliament of Southern Ireland was to include four representatives from each of the two universities—the University of Dublin and the National University of Ireland. When, subsequent to the Treaty and the forming of a constitution for the Irish Free State, Dáil Eireann replaced the Provisional Parliament the representation of each university was reduced to three. It has remained at that figure for the past ten years. It is noteworthy that the original provision in the constitution was to have representation of the universities in the Senate, not in the Dáil, and it was the Dáil itself which made the change. During the period in which the universities have been represented Dublin University has consistently returned three Independents, while the representation of the National University has, in recent years, been divided on party lines. At present the National University returns two supporters of the Government and one member of the opposition. Should the present Bill be passed it will not come into operation until the end of the present Dáil.

DUBLIN SLUM CLEARANCE

An official inquiry was held last week by an inspector of the Department of Local Government and Public Health concerning a scheme for the acquisition of sites in the north-eastern quarter of the city in order to replace the existing houses by 272 dwellings for the accommodation of 1400 people of the working classes. The proposed area includes a large part of what was the fashionable residential quarter in the eighteenth century, and among the houses to be demolished is that in which the famous Misses Gunning, reigning beauties in London in the middle of the eighteenth century, were born. In giving evidence at the inquiry, Dr. M. Russell, medical officer of health for the city, said that in the area the evils associated with bad housing were more apparent than in any other part of the city. The mortality among infants and young children was exceedingly high. He had questioned many of the residents who had been living there for 10 or 15 years, and he had found that it was a common thing for three or four children of one family to have died during that period. These deaths were not due to inattention, but were a direct result of the bad housing.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 3RD, 1934

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 11 (last week, 23); scarlet fever, 2896 (last week, 3075); diphtheria, 1234; enteric fever, 12; acute pneumonia (primary or influenzal), 1692; puerperal fever, 35; puerperal pyrexia, 116; cerebro-spinal fever, 38; acute poliomyelitis, 7; acute polio-encephalitis, 1; encephalitis lethargica, 8; dysentery, 14; ophthalmia neonatorum, 87. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on March 12th–13th was as follows*: Small-pox, 17; scarlet fever, 1724; diphtheria, 1873; enteric fever, 8; measles, 3040 (last week, 2414); whooping-cough, 357; puerperal fever, 29 mothers (plus 9 babies); encephalitis lethargica, 261; poliomyelitis, 5; "other diseases," 115. At St. Margaret's Hospital there were 13 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In 118 great towns, including London, there was 1 death from small-pox (at Blackburn), 2 (1) from enteric fever, 130 (53) from measles, 14 (3) from scarlet fever, 54 (17) from whooping-cough, 60 (6) from diphtheria, 37 (17) from diarrhœa and enteritis under two years, and 96 (16) from influenza. The figures in parentheses are those for London itself.

Carlisle reported the death from enteric fever outside London. The deaths from influenza included 8 in Birmingham, 5 in Liverpool, 4 in Croydon and in Sheffield, 3 in Coventry. There were 12 fatal cases of measles in Liverpool, 8 in Leeds, 5 in West Ham and in Middlesbrough, 4 in Preston. Whooping-cough caused 7 deaths at Liverpool, 3 each at Birmingham and Bristol. Eight deaths from diphtheria were reported from Leeds, 4 each from Manchester and Birmingham.

The number of stillbirths notified during the week was 294 (corresponding to a rate of 48 per 1000 total births), including 48 in London.

*By the courtesy of the medical officer of the L.C.C. we are enabled to give these figures nearly a week earlier.

KENSINGTON HOSPITAL FOR CHILDREN.—Last week Princess Louise, Duchess of Argyll, performed the opening ceremony of the third unit of this children's hospital which bears her name. The institution now has 80 beds.

CORRESPONDENCE

DRUGS IN POST-ENCEPHALITIC PARKINSONISM

To the Editor of THE LANCET

SIR,—In his interesting paper in your last issue Dr. A. F. Hurst reminds us of the very real, indeed often quite dramatic, relief which may be obtained in certain cases of chronic parkinsonism by the use of a certain group of drugs, provided they are given in sufficiently large doses. As he points out, this relief is brought about by the reduction or removal of the muscular rigidity which, without them, acts as a perpetual brake on all the ordinary movements of daily domestic life. There seems no doubt that this is a definite, almost a specific, action in which suggestion does not play the primary part. Whilst fully endorsing all that he writes as to the value of the two members of the group to which he refers, hyoscine and stramonium, I notice that there is no mention of the equally effective third member of the group, belladonna. Whilst all act similarly in the relief of rigidity, each has certain advantages and certain drawbacks.

In some persons one is effective when the others are not. Dr. Hurst's use of pilocarpine in large doses where dryness of the mouth is a source of difficulty is a happy suggestion which I shall certainly try. Meanwhile in manycases the fact that some drugs act more in checking the secretion of saliva, so far from being a disadvantage is often a valuable asset by controlling the excessive dribbling. Indeed it was solely with this object in view that in 1925 I began to prescribe belladonna in these cases; and it was not until the doses had been somewhat tentatively raised that its surprisingly beneficial effects on the rigidity showed themselves. My early results with belladonna were recorded in 1926 (Brit. Med. Jour., i., 129). Amongst them were instances of remarkable improvement, such as have been observed after hyoscine and stramonium. These responses to this form of treatment are as surprising as the temporary spontaneous outbursts (kinesia paradoxa) and have the advantage that they can be maintained for months or even years by continued treatment. In dealing with a large out-patient clinic it is not desirable to give drugs which require the use of hypodermic medication; for that reason I find the other two more convenient than hyoscine for the majority of my cases. In an institution or in better-class private cases this objection to the use of hyoscine does not hold good. Whichever of the three is used the important thing is to give a large enough dose, which can easily be found for each case. Not only so, but the amount must be increased as required. A year or two ago I saw a striking instance of this in my chnic for encephalitis cases at the Sheffield Royal Hospital. A man who had been taking 1½ drachms of tincture of belladonna daily for many months, with considerable benefit, began to lose ground. One day he came up looking more erect and alert than he had been for a long time. His salivation was also much less. We could not account for this improvement until he admitted that he had been taking double doses of his medicine for the last week. He had been given a fortnight's supply and taken it all in a week. He gave as his reason that it made him feel so much better. Many of my out-patients are now taking as large or larger doses without any toxic symptoms. It is only right to add that some of these cases of parkinsonism do not respond to any of this group of drugs, and some seem to be actually made worse by their use.

Whilst satisfied that the action of this group is a real pharmacological action, quite independent of suggestion, I have considerable hesitation in admitting the real value in these cases of any remedy taken for a special purpose, so long as the purpose is known to the patient. Dr. Hurst has rightly emphasised the importance of psychotherapy in treating these cases. This cuts two ways. They are so exceedingly suggestible that almost anything given with sufficient emphasis—especially as regards phasic disturbances, such as disorders of sleep, oculogyric or other attacks—may for a time prove successful. Carefully controlled trials of caffeine, strychnine, and ephedrine in my hands have not given evidence of any constant results.

What is most needed at the present time is some method of relieving tremor. As time goes on this symptom is appearing in an increasing number of cases, and in many it is severe and a cause of constant distress which nothing relieves.

I am, Sir, yours faithfully,

Sheffield, March 11th. ARTHUR J. HALL.

To the Editor of THE LANCET

SIR,—If it is not presumption on my part, I should like to give a warning as to the treatment by stramonium of post-encephalitic parkinsonism, so admirably explained by Dr. Hurst. That is, if there is an interruption of the treatment for even a short time it is necessary when the stramonium is resumed to begin with small doses and work up to the maximum. A man who had been a graven image, unable to feed, dress, or talk, was treated with Extr. Stramon. U.S.P. He was taking 0·25 g. t.d.s. and was walking long distances, going to football matches and the cinema. He had a severe attack of tonsillitis and was unable to swallow his pills for six days. Then his wife gave him his usual dose of stramonium. Three hours afterwards I was sent for in a great hurry as he was in a state of maniacal delirium, with dilated pupils and very restless. In 12 hours he was all right again, I resumed the stramonium in small doses, and in 14 days he was taking the full amount and was his old self again.—I am, Sir, yours faithully,

Scunthorpe, Lincs, March 11th. W. S. HALL.

THE BARBITURATES

To the Editor of THE LANCET

SIR,—The conclusions which Sir James Purves-Stewart and Sir William Willcox draw at the end of their paper on "Cisternal Drainage in Coma from Barbitone Poisoning" in your last issue call for comment. To take them in the order given:

(1) No drugs are always free from danger if taken over long periods and under all circumstances. But the cases given in support of their conclusion against the barbituric acid group in their paper scarcely strengthens their claim to restrict the prescribing of these drugs by medical men. To be called upon to write on the prescription "not to be repeated" and "to be retained by the chemist" may, and in many instances will, be found to be very serious restrictions. The doses regularly taken in the cases described were all large doses, although I note that the writers regard them as small ones, and anyone taking such doses except under direction of their medical adviser was certainly acting unwisely; but does the number of such foolish people justify the penalising of thousands of reasonable persons from

being treated in the ordinary way? The cases given all showed that any untoward symptoms were quickly cleared up by the withdrawal of the drug, a point which has been emphasised on several occasions recently when dealing with therapeutic as against massive doses.

(2) The onus of proof of addiction rests with those who make the statement; this has not been forthcoming in this controversy. It is certainly of interest that neither Sir James Purves-Stewart nor Sir William Willcox had any difficulty in discontinuing the drugs in the cases cited in their paper, notwithstanding the length of time the patients had been taking them.

(3) Those who have seen these cases seem to be very limited in number, as also the cases themselves would appear to be. Further, in those that are reported, owing to the great economy of language used in describing them, it is impossible to free one's mind from the possibility of other factors being the determining cause of the patient taking an overdose.

(4) The cases mentioned by Prof. R. Richards call for a much more detailed report. We are fully aware that "loss of memory" is a common statement made by persons who have acted unwisely or have placed themselves for some reason in a difficulty. My own experience has shown how frequently this alleged loss of memory is untrue in fact, and that when the patient is examined by anyone experienced in mind disturbance he usually admits the inaccuracy of his statement. Fortunately, in disorder or disease, symptoms are associated with other symptoms, and although "loss of memory" may be a reasonable explanation to a layman, it is not accepted by a medical man unless the history and accompanying symptoms and physical signs support it.

I am not suggesting that Prof. Richards has not a complete answer to this criticism, and no doubt he will supply it by giving us a full history and report of his cases, for the importance and the rarity of them call for this being done. Again, it is interesting to note that all the cases he reported recovered notwithstanding the largeness of dose taken. Indeed, the longer this controversy goes on, I am relieved to find, the wider becomes the margin between a therapeutic dose and a dangerous dose. Nevertheless, I shall continue to treat these drugs with the same care as I have always done in the past.

I am, Sir, yours faithfully,

East Preston, Sussex, March 10th. MAURICE CRAIG.

To the Editor of THE LANCET

SIR,—Dr. Gillespie has discovered that some 45 cases of deaths from barbiturate poisoning have been counted twice over. He does not seem to realise that there still remain 85 patients who have died of barbiturate poisoning. It is practically impossible, as Dr. Hutchison has pointed out, to forbid the use of gas ovens, although they are sometimes used for suicidal purposes, but it should surely be possible to devise some regulations to make it much more difficult for patients to buy barbituric acid compounds for suicidal purposes.

I remain, Sir, yours faithfully,

Harley-street, W., March 12th. GEORGE GRAHAM.

To the Editor of THE LANCET

SIR,—In the discussion on the barbiturates statistics are of such importance that it is a pity that Sir James Purves-Stewart and Sir William Willcox did not state the dates on which they observed their Cases 1, 2, and 3, recorded in their interesting paper last week. In the matter of the barbiturates we have, as Kipling says, "'eard old songs turn up again" so frequently that it seems desirable that every writer on this subject should date his cases and state if they have been published previously.

The operation of cisternal drainage appears somewhat drastic in barbitone poisoning. It seems to me, at least on theoretical grounds, that if one performed a lumbar puncture and compressed the veins of the neck as in Queckenstedt's test a rapid flow of cerebro-spinal fluid would wash out the whole central nervous system. The effect could be enhanced by an intravenous injection of normal or hypotonic saline. This method would save performing an operation which is far from safe in inexperienced hands upon an extremely ill patient.

I am, Sir, yours faithfully,

CLIFFORD ALLEN.

Colney Hatch Mental Hospital, New Southgate, N., March 13th.

CLINICAL DATA IN ASTHMA

To the Editor of THE LANCET

SIR,—In his paper on this subject (THE LANCET, Feb. 10th, p. 275) Dr. L. J. Witts concludes that clinical tuberculosis is extremely uncommon in asthma. His records suggest that there is an actual antagonism between asthma and tuberculosis. That is not my experience. Asthma cases of a tuberculous origin form at least 25 per cent. of my total asthmatics. I agree that open lesions are uncommon among them, but their tuberculous nature could be rightly judged from the following features usually present.

1. Striking tuberculous constitution.
2. Common family history of tuberculosis.
3. Past history of tuberculous disease, contact with open cases, or delicacy of health of unexplained nature.
4. Clinical signs and X ray examination usually reveal evidence of massive infection or healed lesions, especially in apices, pleuræ, or glands.

More conclusive still—

5. Tuberculin tests give very strong positive reaction.
6. Tuberculin therapy is very beneficial for these cases, and in many it has ended in arrest of asthma.

Such cases, from previous massive infection with tubercle bacilli, seem to become hypersensitive to tuberculotoxins, and thus get attacks of asthma whenever an exciting dose is given from dormant foci in their bodies under certain conditions of life and health.—I am, Sir, yours faithfully,

Government General Hospital, Alexandria, Feb. 24th. A. EL-AGATY.

CLEANING TONSILS AS A SUBSTITUTE FOR ENUCLEATION

To the Editor of THE LANCET

SIR,—While tonsils are still the subject of many debates may I draw attention to the question of cleaning instead of enucleating them in adults. It is a practical proposition as a substitute for which a great deal can be said. It will not cure rheumatism, arthritis, neuritis, &c., in every case, any more than enucleation will, probably because foci have formed elsewhere and other treatment is called for; yet I can say without hesitation it will yield very satisfactory results in a large percentage of these cases. In its favour can be said (1) it will save a patient who has septic tonsils from a rather severe operation; (2) only a small proportion of general practitioners can perform enucleation efficiently, yet any one of them, with a little patience, tact, and skill, can soon learn the knack of cleaning tonsils, much to his own

and his patients' benefit; (3) if largely practised, the queues that daily attend the hospitals and clinics for electrical treatment would diminish rapidly; (4) if the tonsils are septic it is more scientific, speedy, and effective than ordinary electrical treatment, because it is dealing with the cause direct and not the symptoms. Why this method is not commonly known and practised I cannot understand, unless it be that it is not taught at the medical schools.

If your valuable space permits I will give two examples and state the modus operandi involved.

A lady of 48 years had had three attacks of acute rheumatism with mitral disease and many muscular attacks. Her latest ailment was a severe dyspepsia that had lasted for weeks, and could only be partially allayed with sedatives and a liquid diet. Her teeth were good, but though her tonsils appeared to be quite normal they both yielded pus on squeezing. Within a fortnight of the first treatment she felt more comfortable, and within a month she could digest an ordinary diet and enjoy it. That was six years ago, and except for a few muscular twinges of rheumatism, of a minor degree, she had enjoyed excellent health ever since. I state this case specially to show the lasting effects of the treatment.

The second was a lady telegraphist of 23 years who had been suffering from telegraphists' cramp for between seven and eight weeks. During the whole of that time she had been under electrical treatment, one week at a well-known London hospital, and nearly seven at a suburban one. An examination showed her right forearm to be still tender, and hand and arm could not be moved without pain. She could get little sleep, and was becoming weak and exhausted in consequence. Her teeth and throat had been examined at both hospitals, she informed me. My examination showed that though her teeth were fairly good, both tonsils, though apparently normal, exuded pus on squeezing. That condition was explained to her as being the probable cause of her ailment, and cleaning her tonsils or enucleation was advised. On returning to hospital for further treatment, she informed the doctor in charge of her case what I had said. He then examined her tonsils and said there was nothing the matter with them, and he would not advise enucleation. There are still too many, unfortunately, who judge tonsils by their size and appearance. As she was making no progress she soon came back to me, and I advised cleaning her tonsils. She agreed. Within ten days of the first treatment she was in less pain, and within a month she could use her hand and forearm freely without any. Some months later I saw her on duty in the post office, and she informed me she was keeping very well and had no recurrence of her trouble.

The operation is a simple one and consists essentially in cleaning out the crypts and supratonsillar fossæ, if pus has been found. Naturally, owing to the sensitivity of the mouth and fauces, it will be found rather difficult for the first three or four treatments; after that, if care has been taken, it is easy.

The patient is seated in a high-backed chair in a good light—otherwise a head lamp is necessary—and the fauces are sprayed with 5 per cent. cocaine solution. In a few minutes with the mouth wide open, and the tongue held down with a depressor, a broad probe—a bistoury director is good—is now pushed backward and a little outward between the base of the anterior pillar of the fauces and the edge of the right tonsil, so as to get outside the latter. The probe is now pressed towards the centre of it from different points all round its circumference; that will squeeze and force the crypts to expel their contents. If pus exudes the operation is called for and will give satisfactory results. Withdraw instruments and at once advise patient not to swallow anything, and hand water to gargle with. Unless that is done patient's symptoms may be worse for some days from an increased absorption of bacterial poison beyond the daily dose. Now convert the thick probe into a swab with cotton-wool soaked in 20 vol. H_2O_2, and press the same tonsil firmly over several points without rubbing, then withdraw instruments and renew warning.

Repeat the procedure on the left tonsil. During the next four alternate day treatments—if the fauces are not too tender—be content to swab the tonsils twice firmly. At the sixth use a medium and a fine probe and a dental syringe, all bent at nearly a right angle an inch from the end, the latter being loaded with 20 vol. H_2O_2. With the medium probe made into a swab and soaked in H_2O_2, explore and swab out the supratonsillar fossæ, and also use it to squeeze the tonsils in several directions. Rest, and while patient gargles, convert the fine probe into a swab soaked in H_2O_2. Several frothing points will now be seen on the tonsils; these represent the opening of the crypts, which now explore and swab out, then syringe them. Two more full treatments at four- or five-day intervals should suffice. Before then, however, it is necessary to examine both tonsils with your forefinger lest you have overlooked any downward extension of either.

Lastly, the patient should be advised to clean her tonsils each night when she brushes her teeth. This she can do with a swab or a camel-hair tooth brush. No such thing as a tonsil brush could be bought till I got some specially made like a tooth brush, but with the head a little broader and half the length, and fitted with fitch hair, which is rather longer and a little stiffer than camel hair. A throat brush is useless. After such a course of treatment the patient has no difficulty in using the tonsil brush.

I am, Sir, yours faithfully,

Wimbledon, March 8th. D. FINDLAY, M.D.

THE HEALTH OF RADIUM MINERS

To the Editor of THE LANCET

SIR,—I am not prepared to question the statements appearing in a Reuter's telegram to the *Evening News* of March 5th that the average life of the miners of Jachymov is 37 years, and that 15 years' work in these mines was usually fatal, though these were not the impressions that I gained when I was there two years ago. But I think it should be known that fatalities did not occur from mining radium at Jachymov until pneumatic drills were installed. Death is not caused by radium emanation, but by inhaling the very fine particles of dust containing solid radium. Solid radium and radium emanation are two distinctly different things. A diligent search of medical literature for casualties definitely connected with treatment by radium emanation fails to show any.—I am, Sir, yours faithfully,

F. HOWARD HUMPHRIS.

Great Stanhope-street, W., March 6th.

RHYTHMICAL ARTERIAL MUSCULAR CONTRACTION AND THE ELECTROCARDIOGRAM

To the Editor of THE LANCET

SIR,—I much appreciate the interest shown by Dr. Monteith in my views on the cause of a T wave. I have looked up Lord Lister's paper, written in 1858, to which he makes reference. Lister's efforts were directed mainly to the discovery of the part played by the nervous system in modifying the calibre of arteries and in producing local spasms or contractions, lasting from a few seconds upwards, and affecting merely the local blood-supply by acting antagonistically to the current. The arterial contractions I postulate should occur once in every cardiac cycle in the manner depicted graphically in my paper. They may be even superimposed on a certain degree of tonic contraction, and should commence at an instant of time, not later than, say, 0·16 sec. after the crest of the systolic wave of a normally beating ventricle, and relax to zero *about* the end of diastole,

the action being somewhat similar to a reciprocating pump. The modification in volume and pressure caused by this contraction will give rise to a secondary wave or ripple on the appropriate record in the position occupied by the so-called dicrotic notch. The crest of this wave would follow the systolic crest but about 0·2 sec. later through all the ramifications of the pulmonary and systemic arterial trees—each system however having its own, but synchronous, wave. The electrical energy set up by such a contraction should also show itself by a galvanometric deflection at the position of the T wave on the electrocardiogram.

I find it impossible to conceive of an automatic centre, situated somewhere in the sympathetic system and analogous say to the nodal sinus, which could send out suitable rhythmic impulses to the ramification of the systemic and pulmonary trees (especially as they have no longitudinal fibres) and which, acting independently of the nodal sinus, could so control each arterial circular muscular fibre that its contraction would always be so timed as to assist in arterial evacuation. Any irregularity in timing would of course lead to circulatory chaos. If however the circular muscles are *directly* stimulated to contract by the stretching and pressure of the oncoming added volume of blood, injected at systole, the timing would be automatic and invariable in its relation to the systolic contraction.—I am, Sir, yours faithfully,

Egham, Surrey, March 10th. CHAS. B. ROSSITER.

A CONFLICT OF POLICY

To the Editor of THE LANCET

SIR,—Some 18 months ago the medical officer of health of a growing borough of 35,000 inhabitants requested his council to give him an assistant to help him with his increasing duties. It was the time of the economy campaign and his application was tabled but not discussed. Last December he renewed his application which was approved by the public health committee but was referred back to it "for further information" when it came before the council. At this point the executive committee of the local division of the British Medical Association passed a resolution in favour of sending a deputation to the health committee to suggest that if assistance was needed by the medical officer it should be given by the employment of local practitioners. The health committee, however, having heard the views of the deputation, decided to recommend in its original form the appointment of a whole-time assistant. The deputation then waited on the borough council and put forward its view. After a long and largely irrelevant discussion the council decided to adopt the recommendation of its health committee and to appoint a whole-time officer.

Things might perhaps have turned out differently if a meeting of the division had been held at which the medical officer could have given his reasons for requiring a whole-time assistant. While no one could doubt the propriety of practitioners in a locality putting their opinions on such a matter before the local authority, it might have been better to confine their representations to the health committee and not to pursue the matter into the council chamber where the proceedings are reported and the medical officer of health cannot reply. The important issue, however, is the perennial one of the employment of whole-time versus part-time officers in the public health services. The British Medical Association seems to have definitely adopted the view that such work as the holding of child welfare and antenatal clinics should be done by general practitioners. Indeed it was recorded during the above debate that "some of the sentences in the address had been written by the Medical Secretary of the Association in London." The question has often been discussed, and there can be no doubt that it is to the general interest of medicine that practitioners should have a share where possible. Whether it is to the interest of the local authority is more open to doubt. It is the statutory duty of local authorities to carry out certain measures of preventive medicine as efficiently and as cheaply as they can. At the present time many general practitioners, by fault of their training, lack what might be called the preventive outlook; many of them, too, dislike keeping records. The claims of emergencies in private practice are bound to conflict in some degree with work at clinics, whose administration thus becomes more expensive and complicated.

Thus in most cases the medical officer of health feels bound to recommend the appointment of whole-time assistants who have had special training in preventive medicine, although he should always keep his mind open for any alternative which would allow the general practitioners in his area to be actively associated with his work.

I am, Sir, yours faithfully,

March 12th. M.O.H.

THE SERVICES

ARMY MEDICAL SERVICES

THE undermentioned relinquish their appointments:—

Lt.-Col. W. B. Purdon, R.A.M.C., as Asst. Dir, of Hygiene, War Office.

Maj. and Bt. Lt.-Col. A. D. Stirling, R.A.M.C., as Dep. Asst. Dir. Gen., Army Med. Servs., War Office.

The undermentioned appointments are made:—

Lt.-Col. A. C. Hammond-Searle, R.A.M.C., to be Asst. Dir. of Hygiene, War Office.

Maj. R. F. Walker, R.A.M.C., to be Dep. Asst. Dir Gen., Army Med. Servs., War Office.

ROYAL ARMY MEDICAL CORPS

Lt. D. A. Beattie resigns his commn.

ARMY DENTAL CORPS

J. E. C. Robinson to be Lt. (on prob.).

TERRITORIAL ARMY

Maj. K. B. Dickson resigns his commn, and retains his rank, with permission to wear the prescribed uniform.

TERRITORIAL ARMY RESERVE OF OFFICERS

Capt. G. F. Keatinge, from Active List, to be Capt.

INDIAN MEDICAL SERVICE

The undermentioned officers retire: Lt.-Cols. M. S. Irani and C. G. Howlett, and Capt. J. F. O. Bodman (receiving a gratuity).

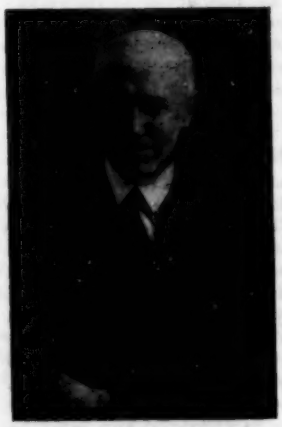
SPECIALIST SERVICE AT PETERBOROUGH.—As the outcome of a suggestion of the medical board of Peterborough Memorial Hospital, an arrangement for specialist service has been made with the Middlesex Hospital. The arrangement is that if a member of the staff, after consultation with his colleagues, thinks that a specialist's services are required, he shall be able to call on a member of the Middlesex Hospital staff to advise on or treat the case. The Middlesex Hospital committee and staff have agreed to work on these lines for a trial period of one year. It will be possible under the scheme either to ask one of the Middlesex Hospital staff to go to Peterborough or to send patients to London for treatment.

OBITUARY

JAMES LEATHAM BIRLEY, M.D. Oxf., F.R.C.P. Lond., C.B.E.

WE announced last week, with a sincere regret that is shared by all the medical profession and by a large group of friends and patients, the death on Tuesday, March 6th, of Dr. J. L. Birley, physician to St. Thomas's Hospital and director of the neurological department.

James Leatham Birley was born at Lingfield, Surrey, in 1884, and was the only surviving son of the late Mr. Francis Hornby Birley and Mrs. Birley, the Vine House, Sevenoaks. He was educated at Winchester and University College, Oxford, where he was a prominent social figure, but where he also showed the scientific promise, which he later fulfilled, by graduating with first-class honours in the Natural Science Tripos in 1908. He proceeded for his medical course to St. Thomas's Hospital, graduated as M.B., B.Ch. Oxon. in 1912, and took the diploma of M.R.C.P. Lond. in the following year. After filling the positions of house physician and casualty medical officer, he was appointed resident assistant physician to the hospital in 1914, but went almost immediately to France on the outbreak of war, in medical charge of the Royal Flying Corps, with the rank of Lieut.-Colonel. His work in France, both as an organiser and as a scientific investigator was of the highest order, and it was largely due to him that the subject of high flying at great speed was tackled and that many of the associated problems were solved. As a member of the Air Investigation Committee he studied the standards of physical fitness for flying, and was a veritable pioneer in the comprehension of a new and difficult subject. He was twice mentioned in despatches and received the military C.B.E. He was appointed consulting physician to the Royal Air Force and a member of the War Office Committee on Shell-shock; his researches into the influence of temperament upon flying, and his reports on the medical problems underlying were published by the Medical Research Council, and were models of observation and reasoning, their arguments being often based upon personal and venturesome experiences.



DR. BIRLEY

At the conclusion of the war Birley devoted himself heart and soul to the interests of St. Thomas's Hospital and its medical school. He was appointed assistant physician in 1919, immediately afterwards being elected F.R.C.P. He became full physician in 1928, and on the retirement of Sir Farquhar Buzzard succeeded him as director of the neurological department of the hospital. He was at that time assistant physician to the National Hospital, Queen-square, but gave up the post owing to the amount of work which now fell to his lot at St. Thomas's. And here, in addition to his clinical and teaching work, he served on all the important hospital committees, and was for three years sub-dean of the school.

In 1920 he was appointed Goulstonian lecturer of the College of Physicians, and for the admirable discourses which he delivered he chose as his subject the principles of medical science as applied to military aviation. He set out in the lectures the mental and bodily mechanisms by which the healthy organism strives with varying success to counteract the abnormality of its surroundings, coming to the conclusion that the art of flying, as regards the sensory material coördination evolved, is one which may be acquired by any healthy individual like other accomplishments, instancing the obtaining of proficiency in games and in the playing of musical instruments. His clear and learned views were published in these columns (THE LANCET, May 29th, June 5th and 12th, 1920) and form his principal contribution to medical literature. His demonstration that the ability to fly depends upon the wonderful adaptability of the human organism was a fascinating piece of work. But he was not a prolific writer, though his contributions to medical literature on diseases of the nervous system, as well as on the medical aspects of aviation, were all sound and informing. He wrote on the pathogenesis of disseminated sclerosis in collaboration with Prof. Dudgeon, the communication being published in *Brain* in 1921; he wrote in the same journal on traumatic intracranial aneurysm, and to THE LANCET in 1927 he contributed a valuable essay upon neurosyphilis.

Birley's death at an early age must have come as a shock to many. He was an extremely popular man. At college he had been a keen cricketer, while he also held the university billiards cue for four years in succession. He was a versatile pianist and an accurate part-singer, and these accomplishments he combined with the gifts of cheering companionship and entertaining conversation. He married in 1922, Edith, widow of Major A. A. Mercer and daughter of Mr. W. A. Tennant, of Oxford House, Ugley, Essex, and leaves a widow, two sons, and one daughter.

Prof. Dudgeon writes: "The loss of Birley is a very serious blow to St. Thomas's Hospital and its medical school and to the medical profession in general. To one who knew him from the time he entered St. Thomas's as a student, and was intimately associated with him during his medical career, his death is little short of a tragedy. It is impossible to over-estimate the value of his work as a physician, his inspiring influence on his colleagues and his delightful personal charm. One cannot do better than quote what has been written of him by an old college friend: 'he was altogether a very outstanding, clear-cut, and attractive personality, and a friend of rock-like constancy.'"

An intimate friend writes: "Birley has left relatively little published work behind him; the Goulstonian lectures upon the medical aspects of aviation, and papers upon disseminated sclerosis, upon neurosyphilis and upon traumatic intracranial aneurysm—these are his contributions in print to medicine, few in number yet of singular merit. But it is not by the dubious and facile criterion of a bibliography that Birley's stature as a physician, or his achievement in neurology,

is to be measured. For the good physician is not comprehended by the sum of his professional attainments, great though they may be. It is only when they are infused by a fine spirit of charity, by intellectual integrity and by courage that he reaches full stature amongst his fellows. Few men have been more richly endowed with these qualities of heart and mind than Birley, and there can be no just appreciation of his work that does not give them pride of place.

"To have lived under the same roof with him during the formative years of his career as a neurologist was to admire his singular clinical acumen, and the careful and methodical labours upon which it was so soundly built. He was a finished exponent of that clinical method which is part of the great tradition of English medicine. Possessed, also, of a sound critical faculty and of a capacity for generalisation, he was never lost in details, nor carried away by facile enthusiasms. His written contributions to neurology are the lucid, concise, and thorough expositions to be expected of a man so gifted and so widely cultured. He wrote solely because he had something to impart, and had not his untimely death decreed otherwise, we cannot doubt that he would have enriched neurological literature still further. To talk with him was to realise how much of value he had to give.

"His extrme competence and thoroughness as a neurologist are well exemplified in an investigation into the ætiology of disseminated sclerosis, undertaken with Prof. Dudgeon, and enbodied in a jointly written paper of which the clinical part was Birley's. In a few pages and from his own observation, he gave a concise and critical account of the forms and natural history of this malady to which nothing can be usefully added, or nothing removed without impairing its finished completeness. To his Goulstonian lectures he lent both his personality and his unique experience, and the result was a balanced and cogent statement upon a new side of medical knowledge.

"In a short career he made for himself, all unseeking—for he was the most modest of men—a fine and enviable place in English neurology. Those who had the privilege of being his friends and colleagues will long remember him with affection and with deep regret for his premature loss."—F. M. R. W.

DRUMMOND JAMES FERGUSSON, M.B. Edin.

Dr. Drummond Fergusson, who died of pneumonia on Feb. 13th at the British Hospital, Port Said, when he was on the way to Kenya for a holiday, came of a family well known in Richmond, where he succeeded his father in practice. He qualified at Edinburgh in 1900 and held a house appointment at the Royal Hants Hospital before returning to Richmond. He was a man of studious habit and literary tastes, devoted to his patients, and untiring in his thoughtful care for their welfare, so that in a remarkable degree he secured both their esteem and affection. His judgment was sound and his decisions were taken with a long view of the patients' interests. A friend writes: "His temperament was mildly sceptic or perhaps it should be called eclectic, so that though thoroughly alive to, and receptive of new ideas and methods, he was never carried away by mere novelty or fashion. There was a streak of diffidence in his character which made it difficult for any but intimate friends to appreciate him at his true worth. He might be called a modern physician of the old school."

THE LATE DR. A. G. BARRS

Dr. A. S. Barling (Lancaster) writes: "Away back in the early 'eighties I was one of Barrs's clinical clerks and I must be one of the last to receive a letter from him; it was written in bed and dated Feb. 28th. It contained criticisms of 'modern methods' in his own penetrating, cynical, and yet kindly style, beautifully worded. Barrs was a wonderful teacher and a great favourite with the students, who respected his abilities and admired him for his obvious sincerity and hatred of shams. Furthermore he never advertised. He had many wise sayings. Here is one of them: 'You must be a competent physician before you can be a safe surgeon,' thus anticipating by half a century the present team system. On one occasion I remember that he quoted Allbutt thus, 'Overt gout never causes visceral disease.' Then a smile came and he said, 'Gentlemen, perhaps that is a little above your heads, so I will translate it into the vernacular: If gout attacks your joints it never rots your guts.' He was one of the happiest of men and died, as he always wished, of a massive cerebral hæmorrhage."

PANEL AND CONTRACT PRACTICE

The Capitation Fee

THE deputation from the Insurance Acts Committee was received by the Minister of Health on March 8th, when Dr. Dain spoke of the hardship inflicted on many members of the profession by the 10 per cent. cut on the 9*s*. capitation fee. This hardship is common knowledge amongst medical administrators although hardly realised by the public. Many insurance doctors have had to take their sons away from public schools as a result of this and other deductions. The quarterly cheque without the cut was often completely mortgaged before its arrival; ends hardly met then, so that the loss of ten pounds out of every hundred just made the difference, necessitating change of plans, of outlook, and often of environment. The national emergency which docked panel cheques also affected private practice. The patient who used to consult his doctor when not well learnt to go without medical attendance; others who used to be regular private patients went to hospitals; with the result that the receipts from private practice have fallen considerably in every area, and particularly in those industrial areas where unemployment is severe. The increasing number of doctors in private practice has made things still more difficult.

The Minister could not promise the deputation that the cut would be removed, but he did promise that the profession would not be forgotten and that their 10 per cent. should be restored if other people's were restored. This was really confirming the promise made by Mr. Neville Chamberlain when he was Minister of Health at the time the cut was imposed—namely, that as the profession had faced the situation created by the national emergency with such good grace he would see to it that when the emergency was over the capitation fee should be restored to normal at the earliest possible moment.

Mileage and Special Mileage

At the annual meeting of the distribution committee for England it was decided to obtain new figures from each insurance practitioner claiming payment for mileage. It is the duty of this committee to see that

the £250,000 allotted is equitably divided amongst those entitled to it, and the accuracy of the figures is continually being challenged. And rightly so, owing to the varying conditions of country practice. A new doctor starting practice in a country place will completely upset the returns of those committees who calculate mileage allowances upon the distance from the nearest insurance doctor. Insured persons also move about. The North Riding representative reported that his committee had received mileage claims in the last year for 6000 more people, all of which upon investigation were found to be genuine claims. To pay these as well as the other mileage claims, they actually received this year from the distribution committee £2 less money than before. It was thought that possibly doctors were beginning to be more experienced in making claims. The last mileage return was made in 1932. One unit of value is allowed by the Ministry, through the distribution committee, for each mile over two miles that a patient lives from the doctor of choice. The total of such units for the country divided into £250,000 gave a value of the unit of approximately 10*d*. It was stated that in the North Riding the value had gone down to 3*d*. This is, of course, quite inadequate payment. Insurance committees vary in their method of distributing their grant from the central fund. Some calculate the distance from the doctor of choice, others from the distance to the nearest insurance doctor. Evidently a further return of mileage figures for the whole country has become necessary to ensure an equitable distribution.

The investigation of special mileage was stated to be a costly business. The returns for 1928, when the last investigation was carried out, did not show much difference from the return for 1920; the total outlay being about £24,000 in England and £10,000 in Wales. Special mileage is paid for the distance where the actual difficulty of access to the patient's residence begins; for example, if the last mile is up a hill by footpath to the patient's dwelling, the first three miles being by good road, special mileage would only be paid for the last mile. Devonshire receives the biggest grant, just over £3000. It was thought that the opening up of new roads was making it easier to get to such places, and there would probably be a material alteration in special mileage returns; but in view of the cost and the slight difference elicited at the last return the distribution committee decided not to ask for a new investigation this year.

Insured Patient who Pretends

Clause 7 (111) enables an insured person to obtain the refund of payment or the withdrawal of an account sent in within one month by an insurance practitioner for attendance privately, when such insured person had failed to tell the attending doctor he was an insured person and had thus obtained treatment as a private patient. The insurance committee is not obliged to order the refund but it may do so. If it does so order, then the doctor is credited with payment out of the central fund as if the patient were a temporary resident. It is stated there is no appeal from the committee's decision.

The latest application of this clause in London has given rise to thought. A patient sent a message to an insurance doctor's house asking for a visit, no mention being made that the patient was an insured person. Dr. A was out and the message was telephoned by his maid to Dr. B, who attended the case throughout and sent in an account at the end. The patient within one month demanded the withdrawal of the account by Dr. A, who had never even seen the case. In this case Dr. B was a partner of Dr. A but not under contract with the committee as an insurance practitioner. The question that arises is, can the insurance committee insist on Dr. A withdrawing Dr. B's account? The fact that Dr. B was a partner does not affect the position, for the details of a partnership agreement are no concern of the committee. If Dr. B had been an insurance practitioner there would have been no doubt that the committee might require Dr. B to withdraw the account. Supposing however Dr. B had not been at home and the message had been phoned to Dr. C (no connexion with Dr. A at all), but also not under contract with the committee. Could Dr. A be held liable for Dr. C's account? Quite obviously Clause 7 (111) applies if either Dr. B or Dr. C attends for Dr. A on (say) one or two occasions, Dr. A taking over the case later. But when, as in this case, no mention was made by the patient that the services of Dr. A were asked for, and the services of Dr. B were accepted although those of Dr. A were subsequently available—actually Dr. B never knew until much later that the message had been phoned from his partner's house; he thought it was an ordinary private call—can he still be held to be the deputy of Dr. A? Actually in this case the patient was only mildly ill and could quite well have informed Dr. B that she was an insured person, when the position would have been clear. If insurance committees made it quite clear that they do not encourage patients to hide their insurance status, all the irritation and correspondence consequent upon the use of this clause would be avoided. As there is no appeal from the decision the appropriate tribunal would be the medical service subcommittee.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Contraceptives Bill

In the House of Lords on March 7th, when the Bill was being considered on report, Lord DAWSON obtained leave to substitute "regulate" for "restrict" in the title and to replace the words "or written description" in Subsection (1) (*c*) by "diagram or written matter illustrating or describing the use or effect," along with other verbal amendments.

Rural Water-supplies

In the House of Commons on March 8th the Rural Water Supplies Bill passed through Committee without amendment.

HOUSE OF COMMONS

THURSDAY, MARCH 8TH

Milk-supplies to School-children

Sir JOHN HASLAM, on behalf of Captain ELLISTON, asked the Parliamentary Secretary to the Board of Education whether he would direct the attention of local education authorities to the Memorandum on Bovine Tuberculosis in Man, issued by the Ministry of Health, with a recommendation that milk provided for school-children should be certified Grade A (tuberculin-tested) or efficiently pasteurised.—Mr. HERWALD RAMSBOTHAM replied: Attention was called to the Ministry of Health Memorandum on Bovine Tuberculosis in Man, which was issued in 1931, on page 54 of the Report of the Chief Medical Officer of the Board of Education on the Health

of the School Child, for 1930. It is the practice of the Board, in approving proposals by local education authorities for the provision of milk to school-children, to urge the authority to make every effort to secure a supply of pasteurised or tuberculin-tested milk.

Captain HEILGERS: Is the hon. gentleman aware that it is difficult to obtain Grade A tuberculin-tested milk any more in view of the fact that the medical profession have a preference for dirty milk pasteurised, and that that preference has merely killed the production of clean milk in this country?

No answer was given.

Slum Clearance

Mrs. TATE asked the Minister of Health in how many cases he was assured that the slum-clearance programmes adopted by local authorities in accordance with Circular 1331 would be completed within five years.—Sir HILTON YOUNG replied: With the exception of a few instances in which I am negotiating with the authorities concerned with a view to securing acceleration, and of London, the programmes adopted by local authorities are for completion within five years.

Houses per Thousand of the Population

Mr. MITCHESON asked the Minister of Health for the latest available date the number of houses in England and Wales per 1000 of the population and, for comparison, the corresponding numbers at the dates of the censuses of 1911 and 1921.—Sir HILTON YOUNG replied: The estimated number in September, 1933, was 245·8. The corresponding numbers at the censuses of 1911 and 1921 were 214·9 and 211·9 respectively.

Imported Dairy Foods and Tuberculosis

Sir ARNOLD WILSON asked the Minister of Health if he has any information as to whether infection from tuberculosis might be derived from imported butter, cheese, and milk-blended margarine as well as from milk; and whether he was satisfied with the precautions taken to prevent infection from this source.—Sir HILTON YOUNG replied: I am advised that the danger of infection with tuberculosis from dairy products made from pasteurised milk or cream is negligible. I understand that practically all the milk and cream used in the preparation of imported butter and margarine is pasteurised, but I cannot say what proportion of imported cheese is made from pasteurised milk.

Slaughter of Tuberculous Cattle

Dr. HOWITT asked the Minister of Agriculture how many tuberculous cattle had been slaughtered under the Diseases of Animals Act, 1925, and what had been the cost.—Mr. ELLIOT replied: During the eight years of the operation of the Tuberculosis Order of 1925 up to Sept. 30th, 1933, 141,220 tuberculous cattle were slaughtered by local authorities in Great Britain, and the compensation paid amounted to £521,581.

Water-supplies in Rural Schools

Viscountess ASTOR asked the Minister of Health whether the conditions governing the distribution of the grants in aid of rural water-supplies would make it compulsory for provision to be made in every case (except where this was shown to be impracticable) for a piped supply of drinking water to any schools in an aided area which was not now provided with a satisfactory water service.—Sir HILTON YOUNG replied: Rural district councils have no power to compel school authorities to take a supply from their mains. The Ministry in dealing with applications for approval of rural water schemes takes steps to secure that the proposed water-supply will be available to schools, where necessary and practicable, and this practice will be continued in dealing with grant applications.

Panel Practitioners' Remuneration

Major MILLS asked the Minister of Health on how many occasions the panel doctors had had reductions made in their remuneration since 1921; what was the percentage of each such reduction; and the estimated saving to the Exchequer on each.—Sir HILTON YOUNG replied: The capitation fee payable to insurance doctors was by agreement with the British Medical Association reduced from 11*s.* to 9*s.* 6*d.* per insured person as from Jan. 1st, 1922, and, after reference to a Court of Inquiry, from 9*s.* 6*d.* to 9*s.* as from Jan. 1st, 1924. The fee of 9*s.* was made subject to an economy deduction of 10 per cent. as from Oct. 1st, 1931. The amount of the saving effected by a reduction of the capitation fee depends necessarily on the number of insured persons entitled to medical benefit, which varies from year to year. The total saving accruing to the National Health Insurance Funds of England and Wales in the first year of the first reduction was approximately £995,000, and the saving in the first year of the second reduction was approximately £342,000. The Exchequer's proportion of these sums is approximately £221,000 and £76,000 respectively. The whole of the savings effected by the economy deduction of 10 per cent. inures to the benefit of the Exchequer, and the saving in England and Wales in 1932 amounted to approximately £715,000.

Payment of Midwives

Mr. D. G. SOMERVILLE asked the Minister of Health if he was aware that a large number of certified maternity nurses attending cases frequently did not receive their pay; and whether he would consider some arrangement which would better ensure that the midwife, who was indispensable, was at all events paid out of maternity benefit.—Sir HILTON YOUNG replied: Cases have come to my notice in which midwives have complained of difficulty in obtaining payment of their fees. The selection of a midwife and the amount and payment of her fees are, however, matters of private contract between the midwife and the person engaging her services. Where the confinement is that of a woman entitled to maternity benefit I have every reason to believe that the payment of the midwife's fee is ordinarily regarded as the first charge upon the benefit, and I do not think that the introduction of amending legislation to protect the interests of the midwife in this respect would be justifiable.

MONDAY, MARCH 12TH

Purity of Milk Supplied to Schools

Sir FRANCIS FREMANTLE asked the Minister of Agriculture whether, before approving any proposals submitted by the milk marketing boards for providing milk to schools at reduced rates, the Government would satisfy themselves that such milk would be free from the risk of tuberculosis or other infections.—Mr. ELLIOT replied: I understand that under present voluntary schemes the source of milk supplied to schools has to be approved either by the school medical officer or by the local medical officer of health. I have no doubt that the milk marketing boards will take note of existing procedure in framing the proposals which they will be submitting for approval, and I will certainly bear the point in mind myself.

Milk and Tuberculosis

Sir ARNOLD WILSON asked the Minister of Health whether his attention had been drawn to a report on Causal Factors in Tuberculosis, published by the National Association for the Prevention of Tuberculosis; and whether his expert advisers confirmed the view that the incidence of tuberculosis varied with the consumption of raw milk, a shortage of which more than of any other foodstuff was a predisposing cause of tuberculosis.—Mr. SHAKESPEARE (Parliamentary Secretary to the Ministry of Health) replied: The answer to the first part of the question is in the affirmative. As regards the second part, the causal factors in tuberculosis are numerous and complex, including undernourishment, but my right hon. friend is advised that the nutritive value obtained by the consumption of raw milk might be accompanied by some increase in the risk of infection by bovine tubercle bacilli unless suitable precautions are taken to ensure the safety of the milk.

Magistrates and Cases involving Juveniles

Mr. SPENCER asked the Attorney-General whether the attention of advisory committees had been directed to the need in making recommendations for appointment to the magisterial bench of giving special consideration to persons competent and qualified to fulfil the requirements

under the Children and Young Persons Act, 1933.—Sir T. INSKIP replied: The attention of advisory committees has frequently been directed to this matter, and in the appointment of Justices of the Peace careful regard is paid to the requirements of the Children and Young Persons Act, 1933.

Water-supplies and Pollution

Mr. LEVY asked the Minister of Health if his attention had been called to the serious situation at Kirton, Lincolnshire, in consequence of the closing of the normal water-supply of several hundred people, including school-children, on the ground that the supply was polluted; and what action he proposed to take.—Mr. SHAKESPEARE replied: An engineering inspector of the Ministry has visited the locality to examine the position of the water-supplies. At Kirton a private well on school premises was found to provide water below standard. Immediate steps are being taken to purify the water, and in the meantime other supplies are being used.

Mr. LEVY asked the Minister of Health if it was proposed to give the regional advisory committees statutory powers to enable them to carry out schemes of regional water-supply.—Mr. SHAKESPEARE replied: No, Sir. The committees have been formed for advisory purposes only, their functions being to survey the needs of their regions and resources and advise on measures to be taken. It is for the water undertakers in the region to decide how the recommendations of the committee should be implemented.

Sir JOSEPH LAMB asked the Minister of Health what replies had been received by him to his recent circular sent to rural district councils on shortage of water due to drought.—Mr. SHAKESPEARE replied: 475 rural district councils have so far replied to the circular. Of these, 315 report that their districts are not suffering from shortage; the remaining 160 report shortage of varying degree in parts of their districts, and indicate special measures which are being taken. The following summarises the information received of principal measures taken in the rural districts in which shortage is reported:—

Districts in which alternative supplies are available relatively near and being used	24
Districts in which carrying and carting from more distant sources are necessary and being undertaken	43
Districts in which shortage has been met by deepening of wells	12
Districts in which shortage is met from neighbours' wells and private supplies	42
Other measures	5
	126
Districts in which it is stated that no special action is required beyond economy notices	34
	160

Where the replies suggest that further action is required, a visit is made by an engineering inspector of the Ministry of Health. Additional engineering staff has been engaged to enable this to be done. The inspector advises and assists the authority with emergency measures for the supply of water.

Housing and Slum Clearance

Mr. D. G. SOMERVILLE asked the Prime Minister if he could make any statement with regard to the desirability of setting up a ministry of housing.—Mr. MACDONALD replied: No, Sir.

Mr. LEVY asked the Minister of Health how many slum-clearance areas had been marked out and how many protests he had received from property owners as distinct from site owners, against condemnation without compensation of property which was in good condition merely because it formed part of a slum-clearance area.—Mr. SHAKESPEARE replied: Up to Feb. 28th 2083 areas had been declared by local authorities to be clearance areas. As regards the second part of the question, my right hon. friend has received representations in favour of an amendment of the law, but its present effect is not accurately indicated by my hon. friend. Objections by property owners to the inclusion of houses and other buildings in clearance areas are frequent at the local inquiries held by inspectors of the Ministry before clearance area orders are confirmed, and houses or buildings shown to have been improperly included in an area are excluded from the confirmed order.

School Medical Services

Sir WILLIAM JENKINS asked the Parliamentary Secretary to the Board of Education the number of education authorities in England and Wales which employed school medical officers, dental surgeons, orthopædic surgeons, and school nurses, giving the number of officers per 1000 of children on the books for 1920, 1925, 1930, 1932, and 1933, and giving figures for England and Wales separately.—Mr. HERWALD RAMSBOTHAM replied: The following is the information asked for in so far as it is available:—

I.—*School Medical, Dental, and Nursing Staff in England and Wales*

Year.	School medical officers (including assistant school medical officers).			
	L.E.A.'s	Medical officers.		Ratio of M.O.'s to children in average attendance. (Approx.)
		Actual.	Equivalent in whole-time M.O.'s.	
1920–21	316	812	—	—
1925–26	317	1140	589	1 to 8500
1930–31	317	1301	652	1 to 7600
1932–33	316	1341	659	1 to 7600

Year.	School dentists.				School nurses.		
	L.E.A.'s.	Dentists.		Ratio of dentists to children in average attendance. (Approx.)	L.E.A.'s.	Nurses.	
		Actual.	Equivalent in whole-time dentists.			Actual.	Equivalent in whole-time nurses (excluding district nurses).
1920–21	235	420	—	—	316	1941	—
1925–26	289	584	354	1 to 14,000	317	4520	1745
1930–31	310	741	521	1 to 9,500	317	5485	2178
1932–33	312	774	555	1 to 9,000	316	5630	2243

Notes.—(*a*) Complete figures are not available for the year 1920–21. (*b*) Precise information is not available as to the amount of work done for local education authorities by district nurses. It is therefore not possible to estimate the ratio of the number of school nurses to the number of children in average attendance. (*c*) Separate figures for England and Wales cannot be given without an undue expenditure of time and labour.

II.—*Orthopædic Staff in England and Wales*

—	1920–21	1925–26	1930–31	1932–33
Local education authorities having orthopædic schemes (involving surgical treatment)	N.a.	85	216	228
Orthopædic surgeons directly employed by local education authorities	N.a.	27	121	125

Orthopædic schemes are frequently operated by means of arrangements made between local education authorities and orthopædic hospitals, and in these cases the orthopædic surgeons are not directly employed by the authorities.
N.a.=not available.

Increased Allowance to Dependent Children

Mr. TINKER asked the Minister of Labour how many local authorities had sent resolutions to him, which they had carried, urging the Government to increase the allowance to children in the new Unemployment Bill from 2*s.* to 3*s.*; and what the Government intended to do with the question.—Mr. R. S. HUDSON (Parliamentary Secretary to the Ministry of Labour) replied: My right hon. friend has received resolutions on this subject from 24 local authorities. As regards the second part of the question there is nothing I can add to what was said by my right hon. friend when the subject was debated in committee.

Drinking of Methylated Spirit

Mr. McENTEE asked the Home Secretary the number of persons convicted in England and Wales during each of the past five years from drunkenness attributed to the drinking of methylated spirit, giving separate figures for London.—Mr. HACKING (Under-Secretary, Home Office) replied: The following are the figures of convictions for each of the years 1928–32.

England and Wales		County of London	
1928	446	1928	40
1929	409	1929	39
1930	476	1930	22
1931	582	1931	24
1932	596	1932	30

It will be appreciated that the figures include cases of persons who have been convicted on more than one occasion. Full particulars for the year 1933 are not yet available.

TUESDAY, MARCH 13TH

Stone Dust and Silicosis

Mr. EDWARD WILLIAMS asked the Secretary for Mines whether he was prepared to set up a committee to inquire into the effect of stone dusting as a contributory cause of silicosis.—Mr. ERNEST BROWN replied: The problems of the causation and diagnosis of silicosis are being investigated under the direction of the Industrial Pulmonary Diseases Committee of the Medical Research Council and in other quarters. This I believe to be the best method of attacking the problem of this disease, and at the present stage of the investigations I do not think the suggested committee would serve any useful purpose. At a later stage, however, I will take the suggestion of the hon. Member into consideration.

Mr. T. SMITH asked whether there was any evidence of stone dusting being a contributory cause of silicosis, and whether it was regarded as such.

Mr. E. BROWN: Not that I know of.

Mr. TURTON asked if it would not be simpler to make silicosis an industrial disease under the Workmen's Compensation Act.

Mr. BROWN: No. There are many other issues involved.

Milk for School-children

Mr. HEPWORTH asked the Parliamentary Secretary to the Board of Education whether, in connexion with the scheme for providing milk for school-children, it was proposed to leave open the method of payment, or to instruct the different educational authorities concerned to defray the necessary cost.—Mr. HERWALD RAMSBOTHAM replied: My noble friend is unable to add anything material to the statement made by the Minister of Agriculture on Feb. 22nd pending the submission of the programme of the Milk Marketing Boards. One of the objects of the proposed programme is to encourage an increased consumption of milk by making supplies available to school-children at reduced cost to parents.

Public Assistance Allowances for Children

Mr. GEOFFREY PETO asked the Minister of Health what allowance public assistance committees made for dependent children of able-bodied persons claiming outdoor relief or transitional payments.—Sir HILTON YOUNG replied: Public assistance committees, or guardians' committees, where they use scales of relief, are under no obligation to report these scales to me. In the scales within my knowledge applying to able-bodied applicants for relief, the allowance assigned to a child, within various limits of age and size of family, varies from 1*s.* 6*d.* to 6*s.* 6*d.*

Health of Boiler Scalers of Ships in Dock

Dr. O'DONOVAN asked the Home Secretary if he would obtain power to supervise the health and working conditions of boiler scalers of ships in dock as he did for those employed in factories.—Sir J. GILMOUR replied: This point has been noted for legislation when opportunity arises, but I see no prospect of this during the present session. I understand that conditions have improved during the last few years and I will consider what more can be done without legislation.

MEDICAL NEWS

University of Oxford

The degree of bachelor of medicine has been conferred on F. E. Buckland and M. S. Good.

An election to the Schorstein research fellowship in medical science will be made in June.

It is of an annual value of £200, and is tenable for two years in any of the medical departments at Oxford. Candidates must be graduate members of the University, holding a registrable medical qualification, and should be under 35 years of age. Applications should be sent to the dean of the medical school, University Museum, not later than April 30th.

University of Cambridge

On March 10th the following degrees were conferred:—

M.D.—H. G. Oliver and G. S. W. Evans.
M.B. and B.Chir.—J. T. W. Spiridion-Kliszczewski, W. G. Gill, and G. L. Alcock.
M.B.—H. F. Green.
B.Chir.—P. T. Cooper.

Dr. E. B. Verney, F.R.C.P., professor of pharmacology at University College, in the University of London, has been appointed to the Sheild readership in pharmacology as from Oct. 1st next. It will be recalled that Prof. E. Mellanby, F.R.S., was last year appointed to the new post of Sheild professor of pharmacology, but shortly afterwards succeeded to the secretaryship of the Medical Research Council.

Prof. Verney was born in 1894 and was educated at Tonbridge School and Downing College, Cambridge, gaining scholarships at both places and an entrance scholarship to St. Bartholomew's Hospital, after taking a first-class in the Natural Sciences Tripos in 1916. He qualified in 1918, and at the end of the war held a captain's commission in the R.A.M.C. (S.R.). He was given a Beit fellowship in 1922, and in 1926 was elected to a senior fellowship, resigning on his appointment to the chair of pharmacology at University College in the same year. He also held the post of assistant at the medical unit of University College Hospital. His work has been chiefly on problems of renal secretion, at first in collaboration with Prof. E. H. Starling. Prof. Verney gave the Goulstonian lectures on polyuria in 1927. He is at present dean of the faculty of medicine at University College.

Royal College of Surgeons of England

A meeting of the council of the College was held on March 8th with Sir Holburt Waring, the president, in the chair. Mr. R. H. Burne, F.R.S., the physiological curator of the museum, who is retiring from office, was presented with an address expressing the council's appreciation of his services to the college during a period of 42 years.

Licences in dental surgery were granted to the following:—

J. M. Alexander, L. J. Bailey, B. H. W. Baker, F. N. Beken, V. H. Bowles, Wilfred Boyes, J. A. Brown, Roberto Chartier, W. F. Collyer, Harold Cowen, F. C. Dutton, John Entwistle, G. D. Fleetwood, J. W. Haham, Francis Hart, P. W. Heinemann, S. G. Lattouf, Douglas Lennie, D. F. Malt, Kenneth Morris, W. E. Nelson, J. H. Pitman, H. G. Poyton, Suraj Prakash, D. S. Raubenheimer, L. J. Reed, J. W. Rose, J. A. T. Rowlett, Hella Unger, E. S. Venning, T. H. Williams, D. N. Williamson, and Shimon Zemach.

Diplomas in ophthalmic medicine and surgery were granted jointly with the Royal College of Physicians to the following:—

H. W. Applin, Edith D. Bowie, W. G. Davidson, G. D. Gordon, H. G. Grieve, J. N. Jaswal, A. R. Khan, E. H. W. Lyle, P. H. Maal, W. B. E. McCrea, G. G. Patel, A. W. Patton, L. G. Scoular, Jacob Sherne, K. H. Singh, Effie Slater, P. I. Tierney, and R. L. H. Townsend.

Sir Milsom Rees Scholarships

Two £100 scholarships for sons of medical practitioners to Port Regis Preparatory School, Broadstairs, have been awarded to L. A. Beveridge (Miss Davies, St. Andrew's Rectory, Dinas Powis), and to J. A. C. Morris (Mr. E. G. Hobhouse, 10, Orme-square, W.2).

Superstition and Medicine

On Friday, March 23rd, at 8.45 P.M., at the Princess Elizabeth of York Children's Hospital, London, E., Prof. S. V. Larkey, of the University of California, will give a lecture on superstition and medicine in Elizabethan England. Dr. Herbert Spencer will take the chair, and admission is without ticket.

The New Bradford Infirmary

Woolcombers, Ltd., have decided to give £10,000, in two equal annual instalments, to the building fund of the new Bradford Infirmary.

Allergy in Tuberculosis

A lecture describing his recent investigations into allergy in tuberculosis will be given by Prof. Franz von Gröer, head of the pædiatric department of the medical faculty at the University of Lemberg, on Monday, March 19th, at 5 P.M., at the Lister Institute, Chelsea Bridge-road, London, S.W. The lecture will be in English and those interested are invited to attend.

St. Paul's Hospital

A series of post-graduate lectures will be given on Wednesdays, at 4.30 P.M., from April 18th to May 30th at St. Paul's Hospital for Diseases of the Genito-urinary Organs and Skin, Endell-street, London, W.C. The lectures are open to medical practitioners and students.

International Congress on Tuberculosis

The ninth conference of the International Union against Tuberculosis will be held in Warsaw from Sept. 4th to 6th under the presidency of Prof. Pieztrzynski. There will be three main subjects for consideration. Prof. L. Karwacki (Poland) will open a discussion on the biological variations of the tuberculosis virus; Prof. V. Putti (Italy) will give the opening paper in a discussion on tuberculosis of the bones and joints; and Prof. Léon Bernard (France) will report on the use and organisation of tuberculosis dispensaries. The secretary of the conference may be addressed at Chocimska-street 24, Warsaw. Non-members of the union who wish to take part in the congress should apply to the National Association for the Prevention of Tuberculosis, Tavistock House North, Tavistock-square, London, W.C.1.

The First Clarke Hall Lecture

This lecture will be delivered, under the presidency of the Lord Chancellor, by the Archbishop of York on Monday, March 19th, in the Hall of Gray's Inn, London, at 5.30 P.M., the subject being the ethics of penal action. Many prominent members of the learned professions and of society in general have signified their intention of being present. The lecture is delivered under the auspices of the Clarke Hall Fellowship, which is founded with the object of carrying on the work of the late Sir William Clarke Hall, who will always be remembered in connexion with his interest in juvenile courts and with the methods of probation which he proposed for the dealing with older criminals in this association. The address of the Fellowship is 29, Gt. James-street, Bedford-row, London, W.C., and donations will be welcomed and directed to the National Association of Probation Officers, whose claim upon an endowment is a very strong one.

A Medical Congress in East Africa

In 1932 an inter-territorial meeting of the various African branches of the British Medical Association was held in Kenya. This year, from Jan. 24th–27th, a meeting of the branches took place at Dar-es-Salaam, with Dr. W. K. Connell, president of the Tanganyika branch, in the chair. Representatives from other branches included Dr. H. A. Moffat and Dr. C. M. Murray (Cape-town); Dr. W. H. Kauntze, Dr. R. S. F. Hennessey, and Dr. F. W. T. Lee (Uganda); Dr. J. H. Sequeira and Dr. F. W. Vint (Kenya); and Dr. B. Spearman, Dr. H. O. Watkins-Pitchford, and Dr. T. B. Welch (Zanzibar). In his opening address the president made a plea for the establishment of a specialist service in East Africa. Papers were read by Dr. Sequeira (heredity and disease, the story of the Abbé Gillet's rabbits), Dr. Hennessey (typhus fever in Uganda), Dr. R. E. Barrett (transmission factors in the spread of sleeping sickness), Prof. Schilling (immunisation in connexion with trypanosomiasis), Dr. Welch (diagnosis of leprosy and the treatment of lepers), Dr. Charles Wilcocks (some aspects of native tuberculosis), Mr. H. E. Hornby (bovine tuberculosis in central Africa), Dr. A. G. Owen (medical education of Africans), Dr. Vint (studies of the African brain), and Dr. A. McKenzie (sunshine and moonshine, or the tropical solar myth). The social events in connexion with the meeting included a reception, a golf match, and a dinner and dance.

Walsall Contributory Scheme

The first full year of the contributory scheme of Walsall General Hospital produced £18,220.

Maternity Hospitals

Last year 7184 babies, nearly 20 per day, were born in the Glasgow Royal Maternity and Women's Hospital. The maternal mortality-rate was reduced to 1·5 per cent.—Work has been begun upon the new maternity hospital of Preston Royal Infirmary, which is to cost about £40,000.

Hospital for Epilepsy and Paralysis, Maida Vale

This hospital, it is stated, needs a reconstructed out-patients' department, the daily attendance varying from 150 to 200. More consulting-rooms and better waiting-rooms are also wanted, and an immediate expenditure of £15,000 is indicated, of which £5000 only has been raised.

Whipps Cross Hospital

West Ham town council has approved a scheme for the expenditure of £140,000 on providing 500 more beds at this hospital by the erection of a separate institution in the grounds, together with a new nurses' home, doctors' residence, and the necessary appurtenances. The Ministry of Health is to be asked to sanction the necessary loan.

Demonstration of Contraceptive Technique

On Wednesday, March 21st, at 2.30 P.M., a practical demonstration of the technique of various contraceptive methods will be given at the Clinic for Constructive Birth Control, 108, Whitfield-street, London, W.1, by Mrs. Marie Stopes, D.Sc., and Dr. Evelyn Fisher. Application for tickets, which will be supplied to medical practitioners only, should be made in writing to the hon. secretary at the clinic.

British College of Obstetricians and Gynæcologists

The council has elected to the honorary fellowship of the college: Dr. Archibald Donald, emeritus professor of clinical obstetrics and gynæcology at the University of Manchester; and Sir William Josiah Smyly, consulting gynæcologist to the Rotunda Hospital, Dublin. The following members were elected to the fellowship:

Andrew Moynihan Claye, Leeds; Duncan Coutts, Patna; John Ellison, London; Peter Fleming Gow, Calcutta; Sydney Nuttall Hayes, Lahore; and Maurice Lawrence Treston, Rangoon.

The following have been awarded the diploma of the College:

W. N. Chisholm, V. H. J. Davies, J. C. Hatrick, R. S. MacArthur, Adah E. Platts-Mills, P. R. Thiagarajah, Gertrude Cuttle, A. S. Rajasingham, Harry Richards, and G. D. Sinclair Briggs.

Cumberland Infirmary

Last year this hospital treated 2931 in-patients and 10,122 out-patients. The daily occupation of beds was 140·8, and the average stay 18·3 days. The average cost per occupied bed was £118 14*s.* 9*d.*, the average cost per patient £5 19*s.* 6½*d.*, and the daily cost per patient 6*s.* 6*d.* The administration block is being enlarged to provide 18 bedrooms, a study and a sitting room for probationers. When the work is completed it is hoped to establish a preliminary training school for probationers. Other projected extensions involve an expenditure of at least £50,000.

A Magistrate's Tribute to Doctor

The Hull stipendiary magistrate, Mr. J. R. Macdonald, has paid a striking tribute, in open court, to the bravery of Dr. H. E. Watts-Waters of that city. A few weeks ago a grain warehouse in the Old Harbour collapsed and six men were buried in the debris and killed. A seventh man was trapped in such a way that he could not be released, and Dr. Watts-Waters, at great personal peril of another wall collapsing, amputated his foot on the spot, and in this way set him free. Called as a witness in another case at the police-court, Dr. Watts-Waters was about to leave when the magistrate interposed with the remark that as it was the first time that Dr. Watts-Waters had been in the court since the disaster at the Old Harbour he felt that they should all stand as he left. Thereupon he rose from his chair, and everyone else in court followed his example.

BRITISH POST-GRADUATE MEDICAL SCHOOL

THE Dean of the British Post-Graduate Medical School has issued a statement which summarises the story of the various movements leading up to the foundation of the school. This statement is noticed elsewhere (see p. 586), while below are the final details of the organisation, following on the recognition by the University of London of the new institution as a school of that University. The University has now approved certain proposals with regard to the conditions of tenure of the professors, and there is little doubt that in a few weeks at the most the govening body will find themselves able to complete the necessary preliminaries and to proceed to the steps necessary to fill the various chairs.[1]

It is understood that there will be four professorships, three in the main clinical subjects—medicine, surgery, and midwifery and gynæcology—and the fourth in pathology. The former group will, by arrangement with the L.C.C., have general charge of the beds in the hospital which are devoted to their various subjects, and will also be provided with facilities for original investigations in medical science. The "research" accommodation will, of course, be supplemental to the laboratories required no less than lecture rooms for the teaching of the post-graduate student. The department of pathology no doubt requires rather more generous laboratory accommodation and equipment, but this subject now includes at least three main divisions: (1) morbid anatomy, (2) biochemistry, including pathological chemistry, and (3) bacteriology.

When it has been possible to select the holders of the chairs, and we understand that these posts will be advertised as soon as possible, the next stage will be to proceed to the more detailed organisation of each teaching "team," for we must presume that assistants of various grades will be needed in each unit. It may be anticipated that courses will also be delivered from time to time by eminent physicians and surgeons not permanently attached to the school.

It is of the first importance that the teaching should be of a really high level—suitable for increasing the knowledge of the better grade of medical practitioners. The provision of "refresher courses" may well be regarded as an important item in the activities of the comprehensive post-graduate scheme. Such courses should be particularly adapted to the needs of men who are working in sparsely populated rural areas and who have not reasonable access to a town in which hospital practice is available. Nevertheless this type of activity should not be allowed any chance of "swamping" the more advanced work which may be expected to appeal more particularly to graduates proposing to specialise in some one branch of medical practice. For these, courses of an essentially different character will be needed.

It is not to be expected nor indeed is it desirable that the whole of post-graduate teaching in London should be transferred to Hammersmith. Such a plan would overlook the abundant clinical material and teaching ability which are to be found in the existing special and general hospitals, and which have, chiefly through the activities of the Fellowship of Medicine, been made largely available for example to medical graduates from overseas. Rather is it to be hoped that the new school will act as a centre, and that a cordial relationship will be maintained with other institutions and their valuable and generous work. To quote the report of the Athlone Committee in 1921: "In order to meet the needs of (1) practitioners able to devote up to three months to general instruction; (2) those seeking further knowledge in special subjects; (3) officers in the services on study leave; and (4) graduates from overseas; a post-graduate medical school should be instituted which should be attached to a large and well-equipped hospital, and should be the centre of a great teaching organisation in which the London special hospitals, the poor-law infirmaries, and the existing medical schools with their clinical units and research departments would all find their place." Nevertheless, it should be emphasised that though the school is being set up in London, and though it will of course be most readily accessible to practitioners resident in the capital, its appeal must not be restricted in any way. The school, with its close and novel association with a public hospital owned by the L.C.C., has a national side in that it represents the beginning of an organised attempt to enable general practitioners to keep abreast with the advance of medical knowledge, and a progressive and up-to-date corps of general practitioners is the foundation of any sound scheme for public health. The school has an imperial side, since nowhere more keenly than in the great Dominions is the desire felt that it should be possible for medical men to find in London and among their own folk access to the latest knowledge and the most recent developments of medical technique. It also may claim to have a distinctly international side, since in countries like the United States of America and the Argentine (to mention only two) the desire for such an institution in London is constantly expressed. Great advantage can be expected to accrue to the school, and to the advance of medicine, by the presence of a certain number of colleagues and fellow students from countries whose system of medical training differs somewhat from our own.

The early stages of the school's work must be to a great extent provisional and on the experience then gained future courses will have to be designed.

[1] Three chairs have now been advertised in (1) Medicine, (2) Surgery, and (3) Obstetrics and Gynæcology at £2500 a year each, and (4) one in Pathology at £2000 a year.

DONATIONS AND BEQUESTS.—The late Mr. Tom Davis, of Tulse Hill, retired H.M. inspector of factories, left, payable on the death of his son John Albert, £1200 to the Devon and Exeter Hospital, £1000 to the Brompton Hospital for Consumption, £1000 to King's College Hospital, £500 to the Devon and Exeter Infirmary, £1000 to the Cancer Hospital, and £1000 to the General Hospital, Crewkerne, Somerset. Subject to provision for his wife and children and others, the ultimate residue of the property is to be divided as to one-third to St. George's Hospital, one-sixth to the Dispensary, Exeter, one-sixth to St. Winifred's Home, Exeter, one-sixth to the Devon and Exeter Eye Hospital, and one-sixth to the Devon and Exeter Blind Institute.—The late Mr. James Richard Turner, J.P., of Edgbaston, left £1000 to the corporation of Birmingham for assisting cancer research and a remedy therefor, and £1000 to the corporation of Smethwick towards the provision and maintenance of a maternity home or of a home of temporary rest for women. —By the will of the late Miss Martha Izod, of Edgbaston, the Women's Hospital, Birmingham, will receive £500; the Cottage Hospital, Evesham, £1000; the Midland Counties Home for Incurables, Leamington, £1000 for the endowment and maintenance of "The Izod Ward"; and the Birmingham Eye Hospital £500.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, March 20th.
General Meeting of Fellows. 5.30 P.M.
Pathology. 8 P.M. Annual General Meeting. I. H. Maclean: Toxigenic Properties of Staphylococci. R. W. Scarff and A. J. B. Goldsmith: Types of Squamous Cell Carcinoma in the Buccal Region. S. Monckton Copeman will show a film illustrating the destruction of living cells by invisible ultra-violet rays below 4000 A. U. Demonstrations by W. G. Barnard: 1. Granulosal Cell Carcinoma of Ovary. 2. Cresylic Acid Poisoning of Stomach. 3. Chronic Gastro-œsophageal Ulcer in a Boy aged 12 years. 4. Tuberculous Meningo-encephalitis. Members of the Section of Radiology are specially invited.
THURSDAY.
Urology. 8.30 P.M. Clinico-pathological Meeting. Specimens. Mr. Malcom Baillie: 1. Adenoma of Kidney. Mr. E. W. Riches: 2. Lower Half of a Double Kidney. 3. Sarcoma of Kidney. 4. Retroperitoneal Sarcoma. Mr. E. G. Muir: 5. Hypernephroma.
FRIDAY.
Epidemiology and State Medicine. 8 P.M. Dr. W. A. Daley: The Problem of Hospital Administration arising out of the Local Government Act of 1929.

HUNTERIAN SOCIETY.
MONDAY, March 19th.—8.30 P.M. (at Simpson's Restaurant, Bird-in-Hand-court, Cheapside) Discussion on the Manifestations and Treatment of Uræmia, by Dr. A. A. Osman and Mr. H. L. Attwater. (Preceded by dinner).

CHELSEA CLINICAL SOCIETY.
TUESDAY, March 20th.—7.30 P.M. (at the Hotel Rembrandt, Thurloe-place, S.W.). Dinner, followed by Discussion on the Treatment of Lobar Pneumonia, to be opened by Dr. J. A. Ryle and Dr. R. R. Armstrong.

SOCIETY OF MEDICAL OFFICERS OF HEALTH, Upper Montague-street, Russell-square, W.C.
FRIDAY, March 23rd.—5 P.M., Discussion on Maternal Morbidity, to be opened by Dr. Gladys Hill.

MEDICO-LEGAL SOCIETY.
THURSDAY, March 22nd.—8.30 P.M. (at 11, Chandos-street, Cavendish-square, W.), Mr. D. H. Kitchin, Barrister-at-Law: Heart Disease in Workmen.

NORTH-WEST LONDON MEDICAL SOCIETY.
TUESDAY, March 20th.—9 P.M. (at the Regal Rooms, Regal Cinema, nr. Golders Green, N.W.), Mr. Hamilton Bailey: Diseases of the Testes.

EUGENICS SOCIETY.
TUESDAY, March 20th.—5.15 P.M. (at the rooms of the Linnean Society, Burlington House, London, W.), Prof. R. J. A. Berry: Some Modern Views of the Human Mind and its Disorders.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.
TUESDAY, March 20th.—5 P.M., Dr. H. L. Tidy: Glandular Fever and Infective Mononucleosis (last Lumleian Lecture).

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.
MONDAY, March 19th.—5 P.M., Mr. C. E. Shattock: Demonstration of Specimens Illustrating Diseases of the Joints.
FRIDAY.—Mr. C. P. G. Wakeley: Recent Additions to the Museum.

LISTER INSTITUTE, Chelsea Bridge-road, S.W.
MONDAY, March 19th.—5 P.M., Prof. F. von Gröer (Lemberg): Allergy in Tuberculosis.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.
THURSDAY, March 22nd.—4.30 P.M., Dr. H. Graham Hodgson: The Pathological Appendix.

FELLOWSHIP OF MEDICINE and POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, March 19th to SATURDAY, March 24th.—MEDICAL SOCIETY OF LONDON, Chandos-street, W. Lecture-Demonstration on Glands, Tues. at 2.30 P.M., by Dr. A. E. Clark-Kennedy. ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Course in Medicine, Surgery and Gynæcology. All day.—ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, Great Portland-street, W. Course in Orthopædics. All day.—HOSPITAL FOR CONSUMPTION, Brompton, S.W. Week-end Course in Diseases of the Chest. All day, Sat. and Sun.—PANEL OF TEACHERS. Individual clinics in various branches of medicine and surgery are available daily by arrangement with the Fellowship of Medicine. Courses of instruction arranged by the Fellowship of Medicine are open to Members and Associates.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.6.
DAILY.—2 P.M., Medical and Surgical Clinics, Operations.
MONDAY, March 19th.—10 A.M., Medical Wards and Skin Clinic. 11 A.M., Surgical Wards. 2 P.M., Surgical Wards, Gynæcological Wards, Eye and Gynæcological Clinics.
TUESDAY.—10 A.M., Medical Wards. 11 A.M., Surgical Wards. 2 P.M., Throat Clinic. 4.15 P.M., Lecture, Mr. Green-Armytage: The Sex Neuroses of Gynæcology.
WEDNESDAY.—10 A.M., Medical Wards, Children's Wards and Clinic. 2 P.M., Eye Clinic.
THURSDAY.—10 A.M., Gynæcological and Neurological Clinics. 11 A.M., Fracture Clinic. 2 P.M., Eye and Genito-Urinary Clinics.
FRIDAY.—10 A.M., Skin Clinic. 12 noon, Lecture on Treatment. 2 P.M., Throat Clinic. 4.15 P.M., Lecture, Dr. Ironside: Radiological Fallacies.
SATURDAY.—10 A.M., Medical and Surgical Wards, Surgical and Childrens' Clinics.
The Lectures at 4.15 P.M. are open to all medical practitioners without fee.

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, March 19th.—2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Symonds: Head Injuries (3).
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Critchley: Syringomyelia.
WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic. 3.30 P.M., Dr. James Collier: Clinical Demonstration.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Riddoch: Neurosyphilis (3).
FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Mr. Julian Taylor: Spinal Injuries.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, March 20th.—3.15 P.M., Dr. C. C. Beatty: Demonstration of Medical Cases.

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale, W.
THURSDAY, March 22nd.—3 P.M., Dr. Russell Brain: Clinical Demonstration.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, March 23rd.—4 P.M., Mr. W. G. Scott-Brown: Allergy.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.
WEDNESDAY, March 21st.—4 P.M., Dr. H. Semon: Eczematoid Ringworm.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James' Hospital, Ouseley-road, Balham, S.W.
WEDNESDAY, March 21st.—4 P.M., Dr. Stanley Wyard: Medical Aspects of Goitre.

PRINCESS ELIZABETH OF YORK CHILDREN'S HOSPITAL, Shadwell.
FRIDAY, March 23rd.—8.45 P.M., Prof. S. V. Larkey of the University of California: Superstition and Medicine in Elizabethan England.

NATIONAL COUNCIL FOR MENTAL HYGIENE.
WEDNESDAY, March 21st.—5 P.M. (at 11, Chandos-street, Cavendish-square, W.), Dr. J. Burnett Rae: The Mental Factor in Health.

BRITISH EMPIRE CANCER CAMPAIGN, Yorkshire Branch.
WEDNESDAY, March 21st.—3.30 P.M. (at the School of Medicine, Leeds), Dr. A. T. Todd: The Medical Treatment of Cancer.

MANCHESTER ROYAL INFIRMARY.
TUESDAY, March 20th.—4.15 P.M., Mr. E. D. Telford: Arterial Diseases of the Extremities.
FRIDAY.—4.15 P.M., Dr. A. H. Holmes: Demonstration of Medical Cases.

ANCOATS HOSPITAL, Manchester.
THURSDAY, March 22nd.—4.15 P.M., Mr. E. E. Hughes: Genital Tuberculosis.

ST. MARY'S HOSPITALS, Manchester.
FRIDAY, March 23rd.—4.15 P.M. (at Whitworth-street West Hospital), Dr. Ward: The Functional Nervous Disorders of Children.

SALFORD ROYAL HOSPITAL.
FRIDAY, March 23rd.—4.15 P.M., Dr. C. S. D. Don: Demonstration of Medical Cases.

LEEDS GENERAL INFIRMARY.
TUESDAY, March 20th.—4 P.M., Dr. Towers: Demonstration of Medical Cases.

GLASGOW POST-GRADUATE LECTURES.
WEDNESDAY, March 21st.—4.15 P.M. (at the Victoria Infirmary), Mr. James Russell: Surgical Cases.

Births, Marriages, and Deaths

BIRTHS

GILLESPIE.—On March 5th, at Palmerston-place, Edinburgh, the wife of A. M. Gillespie, M.B., D.T.M., M.R.C.P., F.R.G.S., West African Medical Staff, of a daughter.

MARRIAGES

CHAPMAN—MCALPINE.—On March 7th, at St. Mark's North Audley-street, W., Dr. Wilfred Rougier Chapman to Zelie, younger daughter of Mr. and Mrs. Robert McAlpine, of "Felcourt," East Grinstead, Surrey, and "Glenreasdell," Whitehouse, Argyllshire.

DEATHS

BIRLEY.—On March 6th, at Orford House, Ugley, after a short illness, James Leatham Birley, F.R.C.P., C.B.E., aged 49.
DONEGAN.—On March 8th, at Lysses House, Fareham, Hants, James Francis Donegan, C.B., Lieut.-Colonel R.A.M.C. (ret.), in his 71st year.
MITCHELL.—On March 7th, very suddenly, of heart failure, Arthur Henry McNeill Mitchell, M.R.C.S., L.R.C.P., Lieut.-Colonel, R.A.M.C. (ret.).
STABB.—On March 8th, at Croft Lodge, Torquay, William Wilking Stabb, M.D., aged 67.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

THE PREVENTION OF ACCIDENTS

HITHERTO accidents in factories and on the road have been too often attributed merely to recklessness, carelessness, and to dangerous conditions. Their prevention has been studied by engineers, Government officials, statisticians, and safety-first experts; and inquiries into the causes of road accidents have been based upon coroner's inquests and on information supplied by the police. But in a Chadwick lecture delivered in London last Monday Dr. C. S. Myers, F.R.S., showed that more than half the accidents in factories (fatal and non-fatal) are found not to be due to dangerous machinery; and it has been estimated, he said, that, however much better machinery be guarded, the present factory accident-rate of over 106,000 per annum is unlikely to be seriously reduced by these measures. So, too, a more extensive use of safety-first posters, which rests largely on the mistaken notion that factory accidents are due merely to recklessness and carelessness, is unlikely to yield a further appreciable reduction. On the road, in spite of improved signals, car controls, regulated speeds of traffic, and better lay-out of roads and their surfaces, over 216,000 persons were injured and over 7000 men were killed in Great Britain through car accidents in 1933. At least 80 per cent. of all such fatal accidents, Dr. Myers holds, are attributable to the human factor. It is this, therefore, that requires more thorough study; and the expert needed for such study is not the coroner, whose object is to discover the cause of death rather than the cause of the accident, nor the police, whose object is to discover the allocation of blame for the accident rather than its various predisposing human causes, nor the engineer, whose training lies solely in machinery. The study of the human factor in occupational life is the concern of the industrial psychologist.

Dr. Myers then spoke of the "accident-prone" people, who must be eliminated because they are a danger not only to themselves but also to the general community. Scores obtained in selection tests devised by the National Institute of Industrial Psychology, of which he is director, have proved, he said, to be so highly correlated with the records of the safe driving on the roads, that one well-known insurance company has offered a 10 per cent. reduction in the accident insurance premium to those who have passed the tests satisfactorily. In the application of these tests the following human qualities are examined: accuracy, speed, and regularity of responses to various signals; resistance to distraction; effective distribution of attention; vision; ability to estimate correctly the speed, size, and distance of other vehicles; readiness to grasp the essentials of a dangerous situation and to respond appropriately to it; confidence and general road-behaviour in driving a model car through moving scenery. In several instances, in America, France, and Germany, somewhat similar selection tests have already reduced the frequency of road accidents by about 40 per cent.

Where selection is impossible, Dr. Myers added, special stress must be laid on instruction. Pedestrians, for example, cannot be selected; they need, therefore, to be taught to avoid dangerous situations—from childhood. Moreover, accident-prone persons need not always be dismissed from employment; their accidents prove to be almost always attributable to special causes which can usually be successfully treated, often by appropriate training. Whether selected or not, factory workers exposed to dangerous conditions require to be trained in the safe use of machinery. Incentives, interest, and punishment all have a certain value; but none of them can be regarded as adequate unless supplemented by expert selection and training under the direction of the industrial psychologist.

OPIUM PREPARATIONS FOR COLDS

SOME say cinnamon and some say rum, and a mariner on one of the Channel boats recommends a slice of onion clapped to the sole of each foot; but the common cold usually runs its course, undeterred by nostrums. In the seventeenth century, Dr. Dover thought opium and ipecacuanha good for colds, and now Dr. Harold S. Diehl maintains that he was right, at all events about opium (Jour. Amer. Med. Assoc., 1933, ci., 2042).

Finding that his own colds were improved by taking morphia gr. ¼ at bedtime on two consecutive nights, Diehl initiated an experiment through the dispensary of the health service of the University of Minnesota. Students of the university with acute colds were told that a remedy would be issued to them at the dispensary if they would report the effects they observed. The pharmacist at the dispensary gave medication A and medication B alternatively to those coming for treatment. Medication A consisted of morphine sulphate in the following dosage: for patients weighing less than 100 lb., gr. ¼; for those weighing between 100 and 149 lb., gr. ⅓; for those weighing over 150 lb., gr. ½. Two tablets were given and the patient was told to take one at bedtime on consecutive nights. Medication B consisted of lactose tablets of the same size, shape, and colour as the morphine tablets.

Results were classified as indicating definite improvement, questionable improvement, and no improvement, the control group receiving lactose serving to show how much improvement could be regarded as due to spontaneous recovery. About 75 per cent. of patients taking morphine showed definite improvement, as contrasted with 35 per cent. of patients taking lactose. Nearly 10 per cent. of those taking morphia, however, reported toxic symptoms such as nausea, vomiting, fainting, severe headache, and dizziness. As soon as it became apparent that morphine was of value in the treatment of acute colds, various other opium preparations were tried in the hope that they might prove less toxic. Of these, Dilaudid (dihydromorphinone hydrochloride), codeine-papaverine, dilaudid-papaverine, and morphine-papaverine gave results comparable with those of morphine itself (about 75 per cent. of the cases showing definite improvement), while codeine, papaverine, opium powder, and powder of opium and ipecacuanha were less effective (some 55 to 60 per cent. improved). Opium and ipecacuanha was no more efficacious than opium alone. Nearly 20 per cent. of patients complained of toxic symptoms after taking dilaudid; the toxic properties of codeine and of opium powder were found to be about the same as those of morphine. Morphine-papaverine seems to have been the least toxic of this group of preparations, only 3 per cent. of patients complaining of toxic symptoms after taking it; and dilaudid-papaverine and codeine-papaverine were nearly as blameless. A small percentage (1·7) of patients complained of toxic symptoms after taking lactose, a touching example of the influence of mind upon matter.

Acetyl-salicylic acid and acetyl-salicylic acid-acetphenetidin caffeine were also given trial during the experiment, but gave results very little better than those of lactose.

Diehl concludes that opium and its major alkaloids are of distinct value in the treatment of acute coryza. The chief effect observed was decrease or disappearance of nasal discharge, and there was some evidence that the amount of time lost from work was reduced by opium therapy. None of the preparations used had any effect on subacute or chronic colds or influenza. It must be admitted that the experiment was uncontrolled in rather a wide sense, for who can predict the behaviour of a university student when left alone with a couple of tablets and some straightforward directions? But the results were sufficiently striking to encourage the use of opium remedies among

Dr. Diehl's readers. The possibility of beginning or encouraging drug addiction must therefore be borne continually in mind, and he looks on it perhaps a little too lightly. Of papaverine he quotes the statement ("New and Non-official Remedies") that "its toxicity is low, and neither tolerance nor habituation has been reported," and concerning codeine he quotes Wolff as saying that it "is not practically dangerous from the point of view of habituation." The use of these drugs for the treatment of colds is occasional and only for short periods, and he thinks that one need have no concern in regard to habituation when using this drug combination for the purpose. Wolff's statement about dilaudid, that "it leads more slowly to habituation and addiction than morphine and its devotees are therefore more easily cured," is not particularly reassuring, and those who have studied other reports on this drug (see THE LANCET, 1933, i., 1079, 1317) will be likely to reserve their opinion of its harmlessness. For general use Diehl prefers the combination of codeine and papaverine "because of the high percentage of good results obtained with it, its low toxicity, and the absence of danger, or at least of 'practical danger' of habituation to it."

Commenting on Diehl's paper, Dr. M. F. McCarthy mentions (Jour. A.M.A., Feb. 17th, p. 558) De Quincey's observations on the effect of morphine on acute colds. In his "Confessions of an English Opium Eater" De Quincey remarks that he never caught a cold in all the years he was taking opium, but developed a bad one after he stopped the drug.

PICROTOXIN IN BARBITURATE POISONING

THE barbiturate drugs may be divided into two groups—the "shorter-acting" and the "longer-acting." Adopting this classification A. H. Maloney and A. L. Tatum [1] pointed out that on injection into animals the former—including nembutal, pernocton, and amytal—promptly produce profound narcosis with a high degree of anæsthesia, causing death, in overdoses, by respiratory paralysis. Taken by mouth their action is essentially similar to that of the longer-acting barbiturates (e.g., luminal, allonal, dial) which produce a low-grade narcosis and ultimately pulmonary congestion and other complications. Picrotoxin, they find, will bring about speedy recovery from poisoning by the shorter-acting group in sub-lethal doses if pushed to the physiological limit. In poisoning with the longer-acting barbiturates it must be given in smaller and more numerous doses; the margin between the therapeutic and convulsant dose of the antidote is narrower and the effective intravenous injection has often to be replaced by subcutaneous or intramuscular injection. Hence picrotoxin may be effective in animals for three to four times the minimum lethal dose of the shorter-acting drugs but not for such a large dose of the longer-acting ones.

They reported, nevertheless, a clear gain in recovery-rate and recovery-time of treated animals over the controls. When 200 mg. of luminal was given to a group of rabbits, the average length of life of the treated animals that died was 26 hours longer than that of the controls. Similar results were obtained with the other drugs, but neonal (soneryl) poisoning offered a greater resistance to treatment than luminal. Part of the action of picrotoxin seems to be to hasten the return of the body temperature to normal; why it does this is so far obscure. It also stimulates the respiratory mechanism and raises the arterial pressure. Its beneficial action is showed in stained preparations of lung; in the lung of a control animal no functioning alveoli were to be seen, whereas in the treated animal the areas of congestion were limited and patchy and there were many functionally efficient alveoli.

In a further paper [2] Maloney has tested the anti-dotal value of strychnine and cocaine against that of picrotoxin. These are all convulsant drugs, each with a different primary site of action. Eleven typical barbitone compounds were used intraperitoneally. The picrotoxin and strychnine were injected intravenously and the cocaine subcutaneously, each in fixed single doses. Picrotoxin proved more effective than either over the whole series, and when respiratory failure is imminent, Maloney says, nothing else is so useful. Cocaine and strychnine were practically useless in counteracting pernocton and noctal. Incidentally, the author noted important qualitative differences in the various barbiturates, and affirms that in clinical practice to select the appropriate drug for a given condition is a very delicate task. This work is particularly interesting in relation to recent French observations on the use of strychnine.[3]

[1] Jour. Pharmacol. and Exper. Therap., 1932, xliv., 337.
[2] Ibid., 1933, xlix., 133.

THE TOLPUDDLE MARTYRS

THIS year is the centenary of events which constitute a landmark in the history of English agriculture as well as of the trade-union movement. The agricultural depression existing previous to and at the time of the accession of Queen Victoria was acute, and the wages of the agricultural worker were such as to justify resentment. Many disturbing influences in society had engendered among landowners a real fear of uprisings among their labourers, so that when six of these entered into an agreement to act unitedly in trying to win a rise of pay their action was taken by frightened squires to be an overt sign of revolution. The six labourers were brought to justice and, to the astonishment of all who knew anything of the circumstances, and the horror of those who really understood them, were condemned to lifelong punishment, for few convicts ever returned from the sentence of seven years' transportation. The story is well set out in a short book,[4] detailing the circumstances clearly and with their due psychological background and bringing out their historical importance. Agitation for the release of the prisoners increased as the knowledge of their fate spread, members of Parliament were written to by their constituents, public demonstrations were held, and a petition signed with half a million names was presented to the King. In June, 1835, Thomas Wakley, who had founded THE LANCET 12 years previously and was then M.P. for Finsbury, raised the subject in the House of Commons, and pleaded that an address should be presented by the House to the King asking pardon for the Dorchester labourers. Wakley told the story at length in the House, and although his motion was lost his words bore fruit. His efforts and those of others who fought with him were continued without intermission, and when a year later Wakley brought up the subject again in Parliament, Lord John Russell announced that the King's pardon had been procured.

VARICOSE ULCERATION

TWO papers which together form an issue of the *Revue médicale de la Suisse Romande* (1933, vol. liii., No. 8) will repay perusal by those especially interested in varicose disorders. The first is by Prof. E. Ramel, director of the dermatological clinic at Lausanne, and deals mainly with pathogenesis. The pathological section contributes little that is new to our knowledge, but Ramel includes very good accounts of purpuric dermatitis and dermato-sclerosis. As regards the ætiology of varicose ulceration he is loth to commit himself to the view that the gravitational factor is the most important one. Admittedly not all ulcers that stand in relation to varicose veins are truly varicose in origin, for syphilis, trauma, the tibial site, periostitis, and other factors are all capable of playing a part, but it is general recognised that in uncomplicated varicose ulceration the gravitational factor is the outstanding

[3] See THE LANCET, Jan. 13th, p. 93; March 10th, p. 555.
[4] The Tolpuddle Martyrs, by Marjorie Firth and Arthur Hopkinson, with a Foreword by Rt. Hon. Walter Elliot, M.P., Minister of Agriculture. London: Martin Hopkinson, Ltd. 1934. Pp. 141. 3s. 6d.

one. Pursuing this argument in relation to treatment he lays stress on the importance of antiseptic treatment in ridding ulcers of their varied bacterial flora. This again is a view which conflicts with opinion in this country that it is only very rarely that the actual organisms found on varicose ulcers are of pathogenic significance.

In the second paper E. Jentzer considers injection therapy and various operative procedures. For chronic varicose ulcers he advocates peri-arterial sympathectomy, skin-grafts, and sclerosing injections. This appears unnecessarily heroic except in the case of extremely large ulcers which have not responded to injections and support. Further, in cases of persistent œdema associated with deep thrombosis of a limb he favours sympathectomy, injection of any varicose veins, and resection of a portion of the saphenous vein, the latter procedure on the assumption that the œdema is reflex in origin. It is certainly agreed that the venous thrombosis has little to do with the resulting œdema of the limb, but is only too often due to the associated lymphangitis. But as yet Jentzer's methods for the relief of the condition do not seem to be firmly established.

An interesting account of the use of acetylcholine in cases of varicose ulceration is included.

METHYLATED SPIRIT DRINKING IN SCOTLAND

IN reply to a question asked in the House of Commons recently, Mr. Skelton, Under Secretary of State for Scotland, gave interesting figures with regard to convictions for drunkenness in Scotland during the last ten years—that is, from 1923 to 1932, inclusive. The figures were as follows: 1923 (13,647), 1924 (14,051), 1925 (13,375), 1926 (12,369), 1927 (12,471), 1928 (11,944), 1929 (11,930), 1930 (10,848), 1931 (10,202), 1932 (9788). Replying to the question how many of these convictions were attributable to the drinking of methylated spirits, Mr. Skelton said that it was not possible to give the figures for Scotland in each of the years mentioned. Methylated spirit included surgical spirit, and in respect of these substances the returns obtained from six boroughs—namely, Glasgow, Edinburgh, Dundee, Perth, Inverness, and Stirling—showed the number of convictions for such offences as follows: 1924 (1497), 1925 (985), 1926 (1088), 1927 (969), 1928 (969), 1929 (1017), 1930 (963), 1931 (1031), 1932 (1106), 1933 (1002). These figures were understood to include a considerable proportion of repeated convictions in respect of the same person.

FATHER OF ONE TWIN

THE *Times* published last week a curious item of news from its Stockholm correspondent, concerning an affiliation case tried by the Lower Court at Karlskrona. A woman sued a man for maintenance allowance, alleging him to be the father of her twins. Supported by medical opinion, the court decided that he was father of only one of them, it having been proved by blood tests that he could not have been father of the other child. It would be interesting to know whether the blood tests were made by consent or whether the Swedish courts have power to order them compulsorily. The details of the evidence were not given. In a bastardy case before English magistrates the advocate would be disappointed if, having annihilated the claim as to one twin, he did not also succeed in persuading the court to reject the claim as to the other.

Appointments

WAKELEY, CECIL P. G., F.R.C.S. Eng., F.R.S.E., has been appointed Consulting Surgeon to the Royal Navy.

Certifying Surgeons under the Factory and Workshop Acts:—COWAN, A., M.B., Ch.B. Edin. (Chirnside, Berwickshire); WALLIS, M. J. T., M.B., B.S. Lond. (Maldon, Essex); WEBB, H. F. A. (Cambridge).

Vacancies

For further information refer to the advertisement columns

Alton, Hants, Lord Mayor Treloar Cripples' Hospital and College.—Third Asst. Res. M.O. At rate of £150.

Altrincham General Hospital.—Jun. H.S. At rate of £120.

Belgrave Hospital for Children, Clapham-road, S.W.—H.P. and H.S. Each at rate of £100.

Birkenhead County Borough.—Res. Asst. M.O. £350.

Birmingham, Selly Oak Hospital.—Res. Ear, Nose and Throat Surgeon. £700.

Bournemouth, Royal Victoria and West Hants Hospital.—Res. M.O. £300.

Bristol Royal Infirmary.—Asst. to the Cancer Dept. £300.

Cambridge, Addenbrooke's Hospital.—Res. Anæsthetist and Emergency O. At rate of £130.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.

Cuckfield Rural, Cuckfield Urban, &c.—M.O.H. £800.

Doncaster Royal Infirmary.—H.S. to Ear, Nose and Throat and Eye Depts. £175.

Dublin, House of Recovery and Fever Hospital.—Res. Med. Supt. £675.

Edmonton, North Middlesex County Hospital.—Res. Asst. M.O. £400. Also Asst. M.O. At rate of £350.

Evelina Hospital for Sick Children, Southwark, S.E.—H.S. At rate of £120.

Hampstead General and N.W. London Hospital, Haverstock-hill, N.W.—Cas. Med. O. for Out-patient Dept. At rate of £100.

Hospital for Sick Children, Great Ormond-street, W.C.—Physician to Out-patients.

Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W.—Res. H.S. At rate of £75.

Institute of Medical Psychology, Malet-street, W.C.—Second Diagnostic Physician.

Jerusalem, St. John Ophthalmic Hospital.—H.S. and Asst. H.S. £350 and £300 respectively.

Kidderminster and District General Hospital.—H.S. £150.

Lancaster Royal Infirmary.—Jun. H.S. At rate of £130.

Leicester Royal Infirmary.—Jun. Cas. O. At rate of £100.

London University.—Chair of Medicine, Surgery, and Obstetrics. Each £2500. Also Chair of Pathology. £2000.

Manchester, Ancoats Hospital.—Res. M.O. At rate of £150.

Manchester County Mental Hospital, Prestwich.—Med. Supt. £950.

Marie Curie Hospital, 2, Fitzjohn's-avenue, N.W.—Res. M.O. £100.

Middlesbrough, North Riding Infirmary.—Hon. Ophth. Surgeon.

National Hospital, Queen-square, W.C.—H.S. £150.

National Hospital for Diseases of the Nervous System, Queen-square, W.C.—Res. M.O. £200.

Nottingham General Hospital.—Second Res. Cas. O. At rate of £200.

Paddington Green Children's Hospital, W.—H.P. and H.S. Each at rate of £150.

Plaistow Fever Hospital, E.—Jun. Asst. M.O. £300.

Portsmouth Royal Hospital.—Sen. H.S. and Cas. O. At rate of £175 and £130 respectively.

Princess Beatrice Hospital, Richmond-road, Earl's-court, S.W.—Res. M.O. At rate of £110.

Queen's Hospital for Children, Hackney-road, E.—Dental S. At rate of £100.

Rochdale Infirmary and Dispensary.—Jun. H.S. £200.

Romford, Oldchurch Hospital.—Jun. Res. M.O. £250.

Rotherham Hospital.—Sen. H.S. £200.

Royal London Ophthalmic Hospital, City-road, E.C.—Sen. Res. O. £150.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Hon. Gynæcological Reg.

St. Mary's Hospital, W.—Second Hon. Obstet. Surg.

Shrewsbury, Royal Salop Infirmary.—Res. H.P. At rate of £160.

South Eastern Hospital for Children, Sydenham, S.E.—Jun. Res. M.O. At rate of £100.

Southend-on-Sea General Hospital.—Two Hon. Anæsthetists.

South London Hospital for Women, Clapham-common, S.W.—H.P. At rate of £100.

Southern Rhodesia Medical Service.—Government M.O. £600.

Stockport Infirmary.—Hon. Gynæcological Surgeon.

Swanley, Kent, Hospital Convalescent Home, Parkwood.—Res. M.O. At rate of £200.

Taunton and Somerset Hospital.—Sen. House M.O. At rate of £150.

Todmorden Borough.—M.O.H. and School M.O. £800.

Uxbridge, Hillingdon County Hospital.—Med. Supt. £850.

West Bromwich and District General Hospital.—Cas. H.S. and H.P. Each at rate of £200.

West End Hospital for Nervous Diseases, Gloucester-gate, N.W.—Sen. H.P. At rate of £150.

Westminster Hospital, Broad-sanctuary, S.W.—Asst. Med. Reg. At rate of £100.

Weston-super-Mare General Hospital.—Res. H.S. £150.

Willesden General Hospital, Harlesden-road, N.W.—Cas. O. At rate of £100.

Winchester, Royal Hampshire County Hospital.—H.P. At rate of £125.

Woodside Hospital, Woodside-avenue, Muswell Hill, N.—H.P. £100.

Worthing Hospital.—Hon. Asst. Surgeon to Ophthalmic Dept.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Burton Latimer (Northants) and at Loughton (Essex).